Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
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3- The thermoreceptor in branchiostoma is:
   a- Eye spots
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4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
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5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
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   a- Gill lamella
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7- In petromyzon optic lobes are present in:
   a- Forebrain
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8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

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II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
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6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
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3- Mention the function for TEN only from the following structures: (10 degree)

1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
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10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
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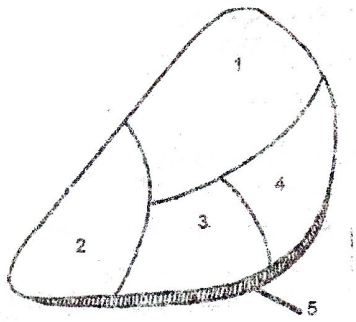

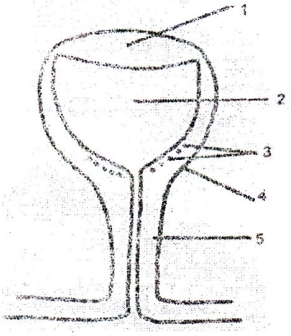

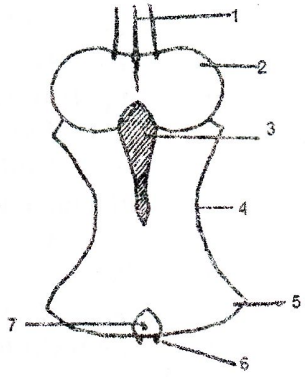

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Best wishes.....

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Zoology Department,
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Final Exam
May 2017/2018

Course: Vertebrates (I)
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Level: Second
Course Code: Z232

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(NOTE: Exam in Two pages)

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II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

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2. The term vertebrata is synonymous to chordate
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Good Luck

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

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7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

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بالتوفيق و السداد هناء عاطف جودة

3- Mention the function for TEN only from the following structures: (10 degree)

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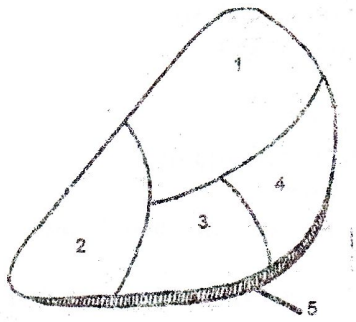

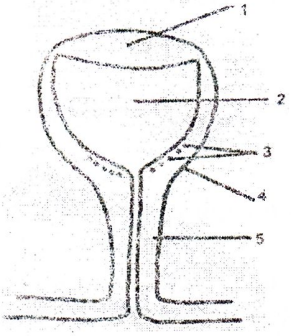

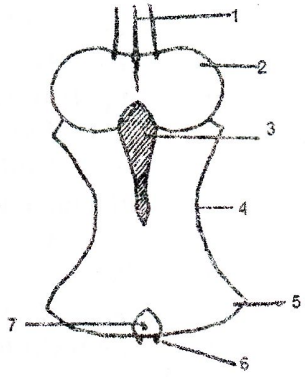

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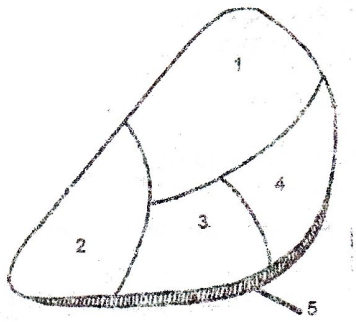

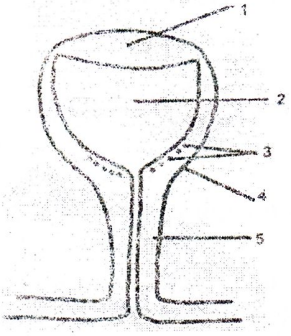

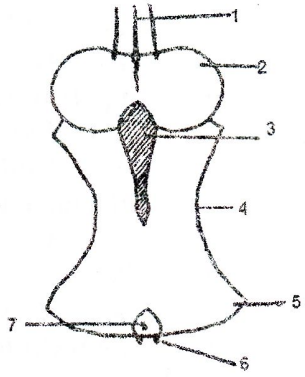

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Time: 2 hours
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- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

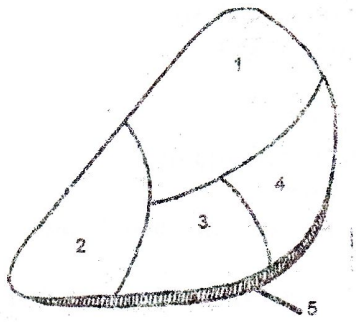
3- Mention the function for TEN only from the following structures: (10 degree)

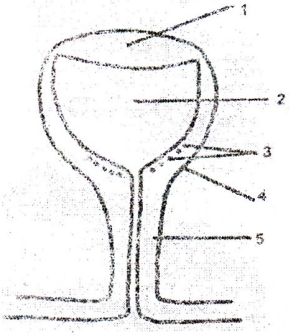
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

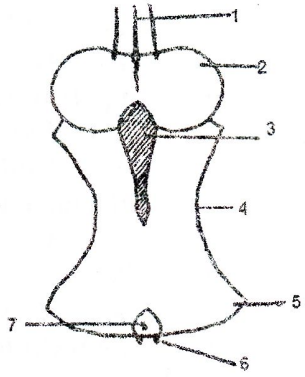
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

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- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
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11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
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Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

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3- Illustrate structure & function of mantle within Mollusca.

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1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

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4- Coiling doesn't affect the symmetry in gastropods.

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بالتوفيق و السداد هناء عاطف جودة

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2. Wheel organ
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5. Oral fimbriae or papillae
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13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
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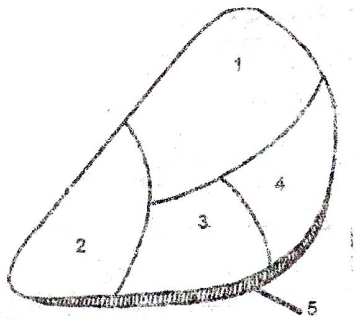

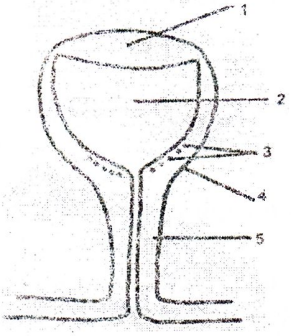

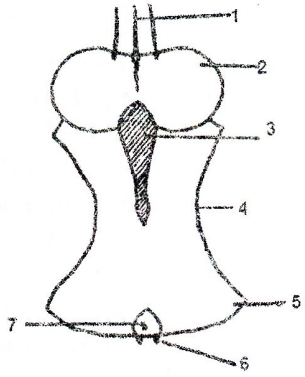

1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
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2- One of the following is converted into thyroid gland of vertebrates:
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II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

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Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

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2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

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7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
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3- Dying of animals when temperature rises.
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4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
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اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

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---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

3- Mention the function for TEN only from the following structures: (10 degree)

1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
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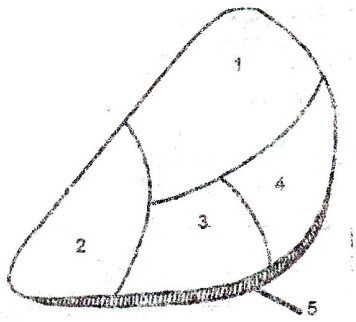
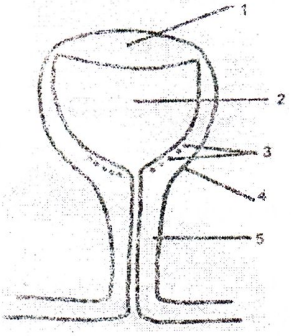
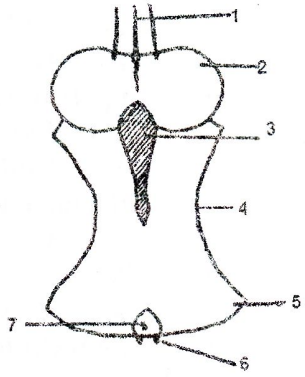
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

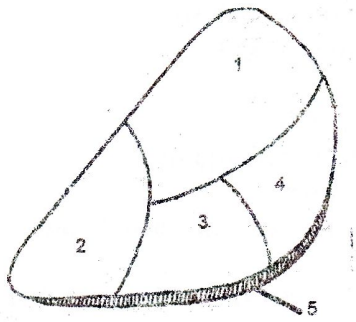
3- Mention the function for TEN only from the following structures: (10 degree)

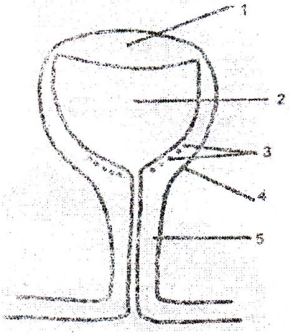
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

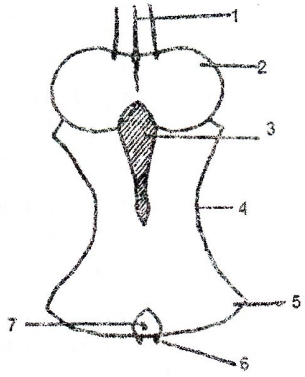
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
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7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

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5- A biome with heavy rainfall and constant warmth.

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7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
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1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

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---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

3- Mention the function for TEN only from the following structures: (10 degree)

1. Atriopore
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3. Velum
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5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
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9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
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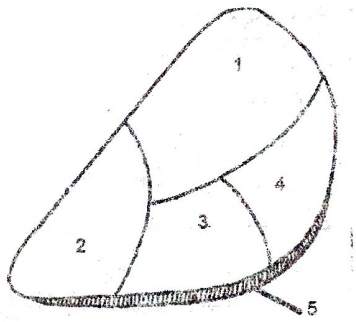

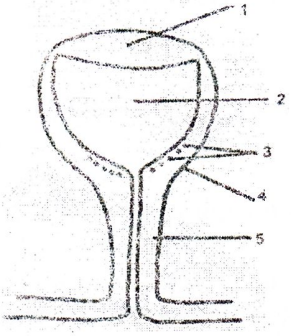

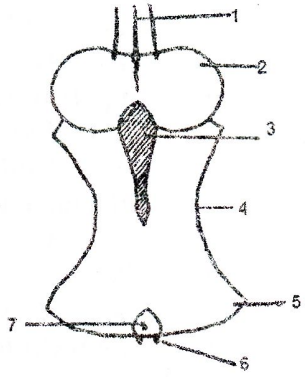

1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
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   d- Ganoid

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   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
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8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

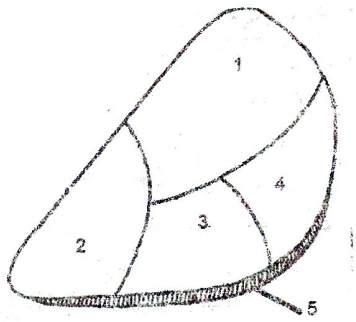
3- Mention the function for TEN only from the following structures: (10 degree)

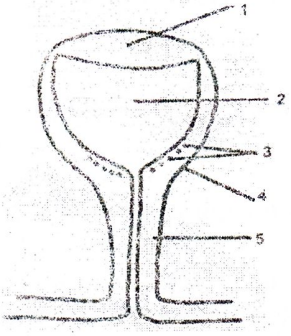
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

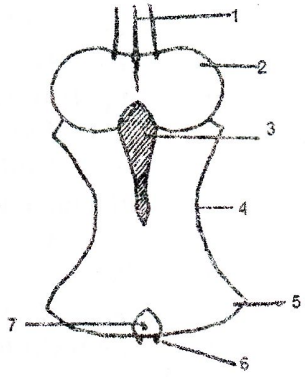
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
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   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
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a) Distribution and abundance
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14- Advantages of indeterminate growth in fishes includes:

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Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
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9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
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8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
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10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
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8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
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Good Luck

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1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

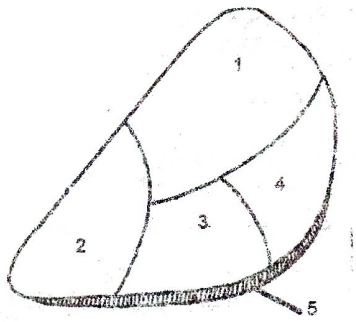
3- Mention the function for TEN only from the following structures: (10 degree)

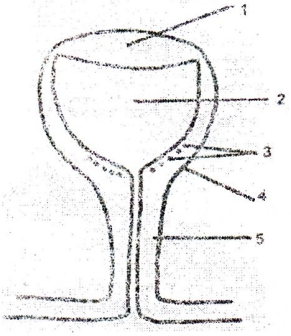
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

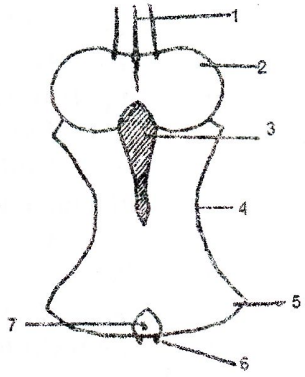
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

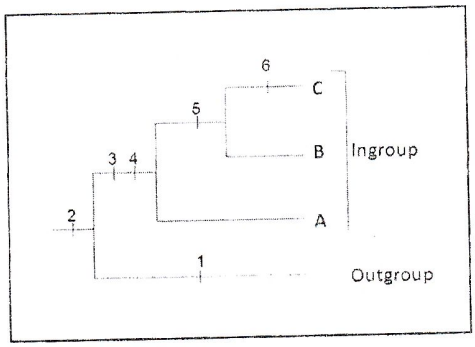
5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
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اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
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3- The limiting factor	Is killing and eating an individual of the same species……( ).
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اقلب الصفحة من فضلك

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---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

3- Mention the function for TEN only from the following structures: (10 degree)

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2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
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4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

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2. **Draw well labeled diagram of extraembryonic membranes.**
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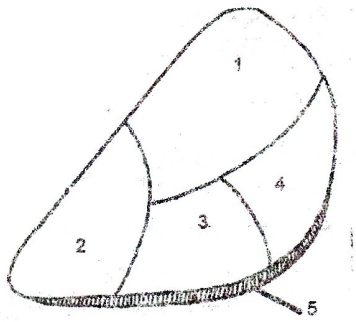

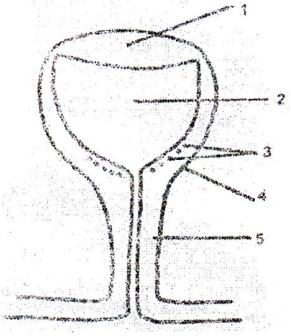

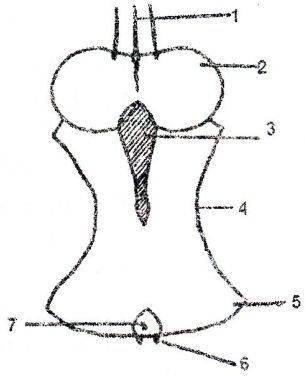

1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

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   a- Cycloid
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   c- Placoid
   d- Ganoid

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   a- Endostyle
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   a- Gill lamella
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7- In petromyzon optic lobes are present in:
   a- Forebrain
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1. Fish is an anamniote animal
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3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
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Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

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- The fish farm should be sited primarily in areas unsuited to other ..... uses.

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- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

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(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

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a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

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b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

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b) by shared derived characters called synapomorphies

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a) Chondrichthyes
b) Placoderms
c) Acanthodians
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a) heterocercal tail and cartilaginous skeleton

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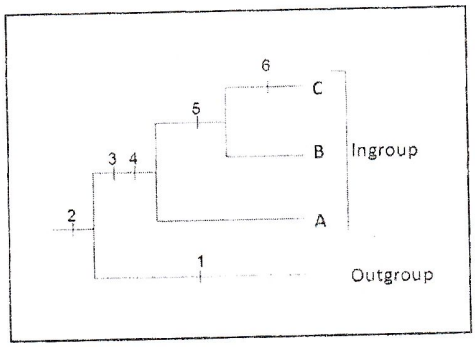

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a) Syanapomorphy
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a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

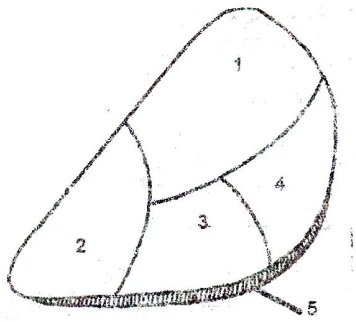
3- Mention the function for TEN only from the following structures: (10 degree)

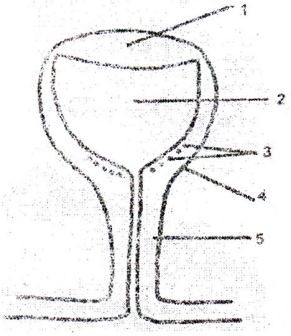
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

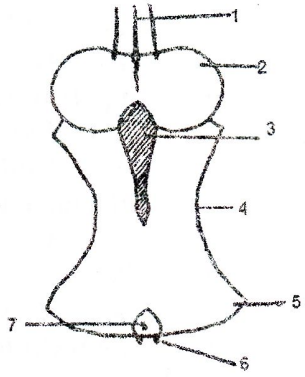
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

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II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
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Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

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3-Mention only 5 of: (10 Marks)

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Good Luck

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

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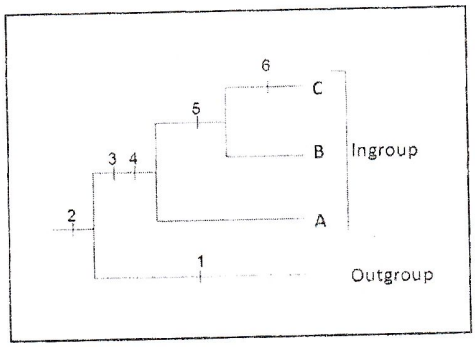

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a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
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a) passively with oxygen
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a) Placental development
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a) Shark
b) Freshwater bony fish
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a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

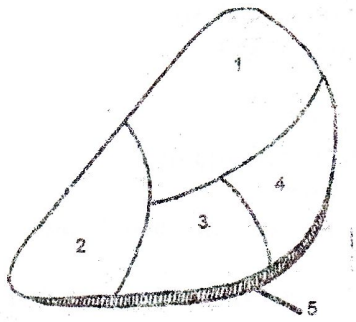
3- Mention the function for TEN only from the following structures: (10 degree)

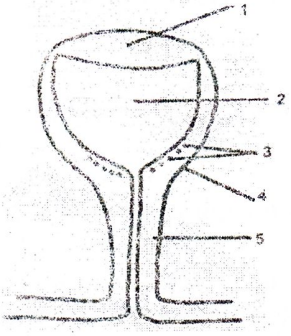
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

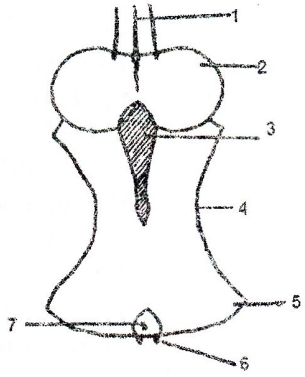
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

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37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

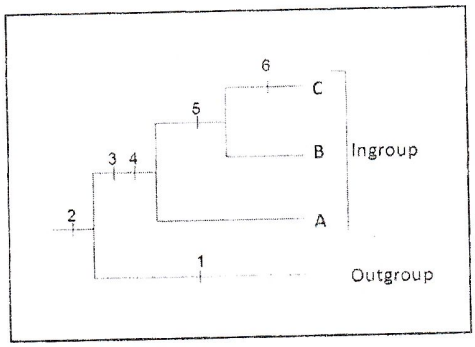
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
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d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

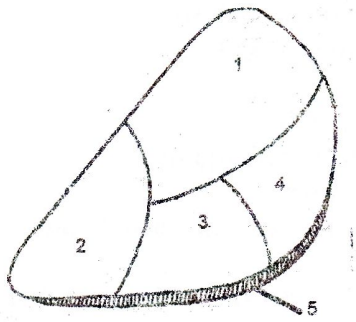
3- Mention the function for TEN only from the following structures: (10 degree)

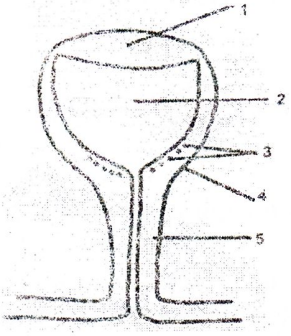
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

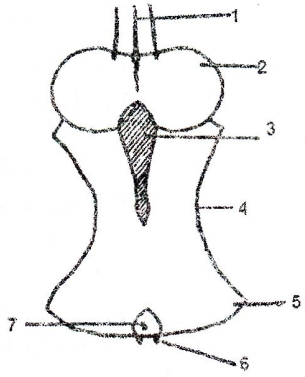
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

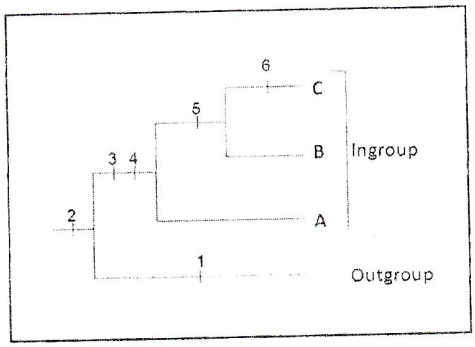
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
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8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
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9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

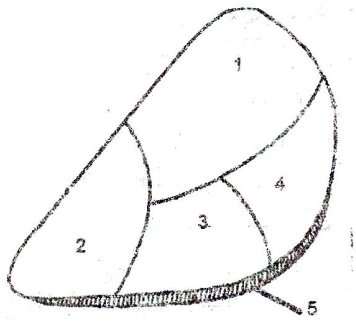
3- Mention the function for TEN only from the following structures: (10 degree)

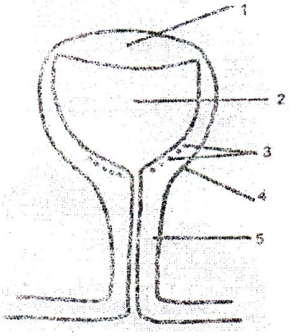
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

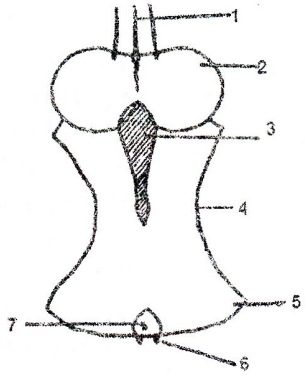
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

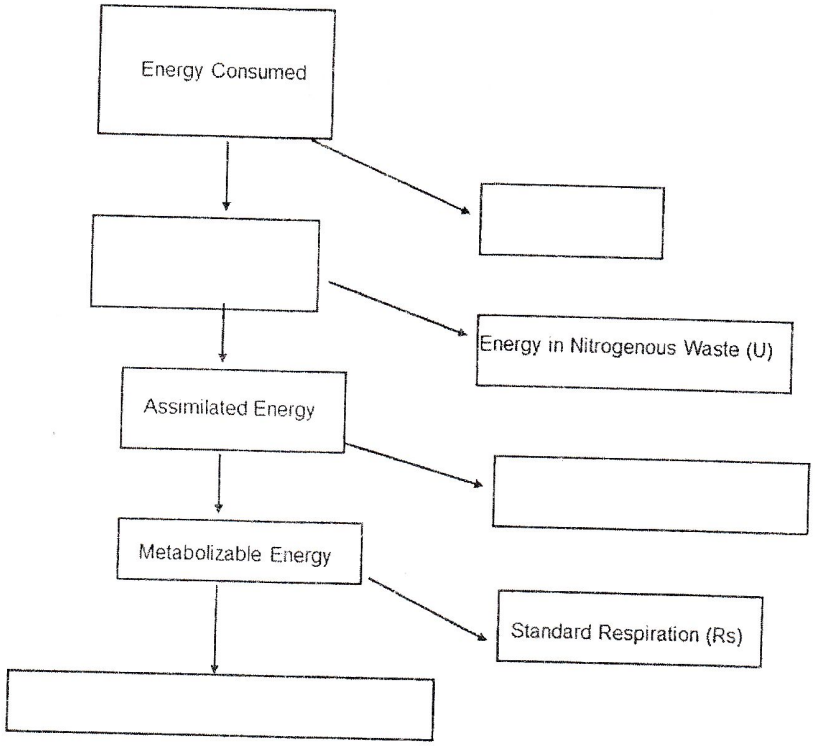
5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

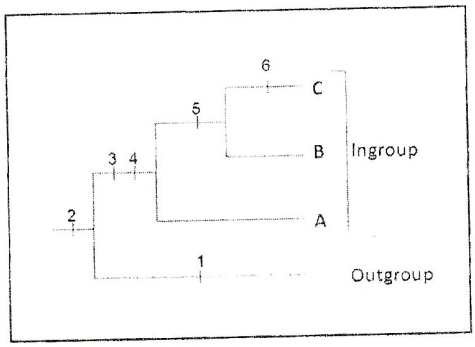
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

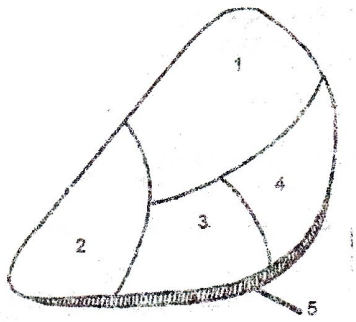
3- Mention the function for TEN only from the following structures: (10 degree)

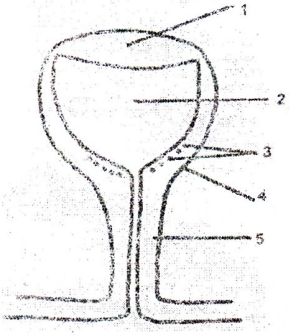
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

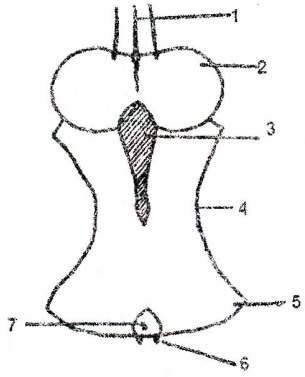
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

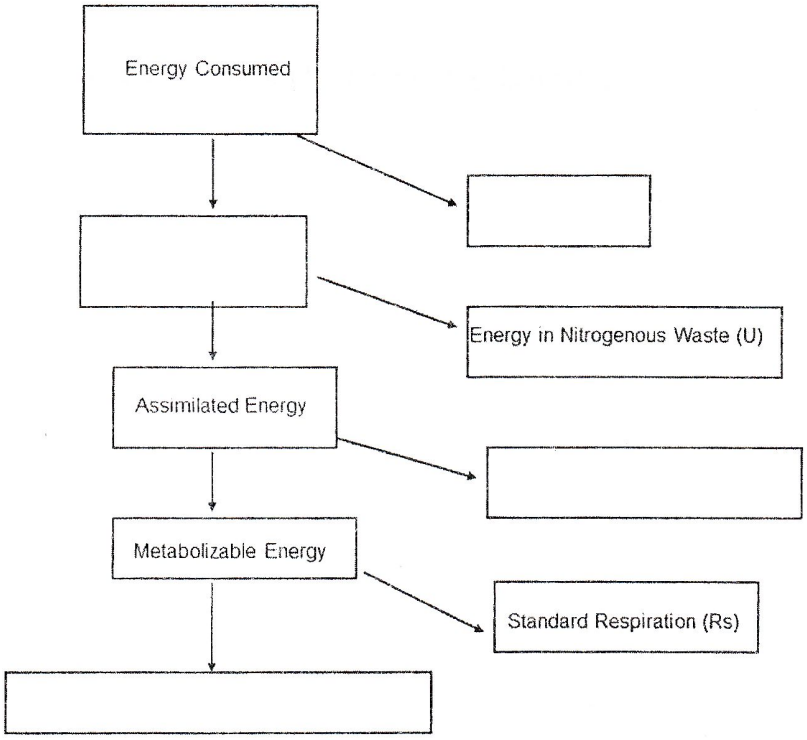
5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

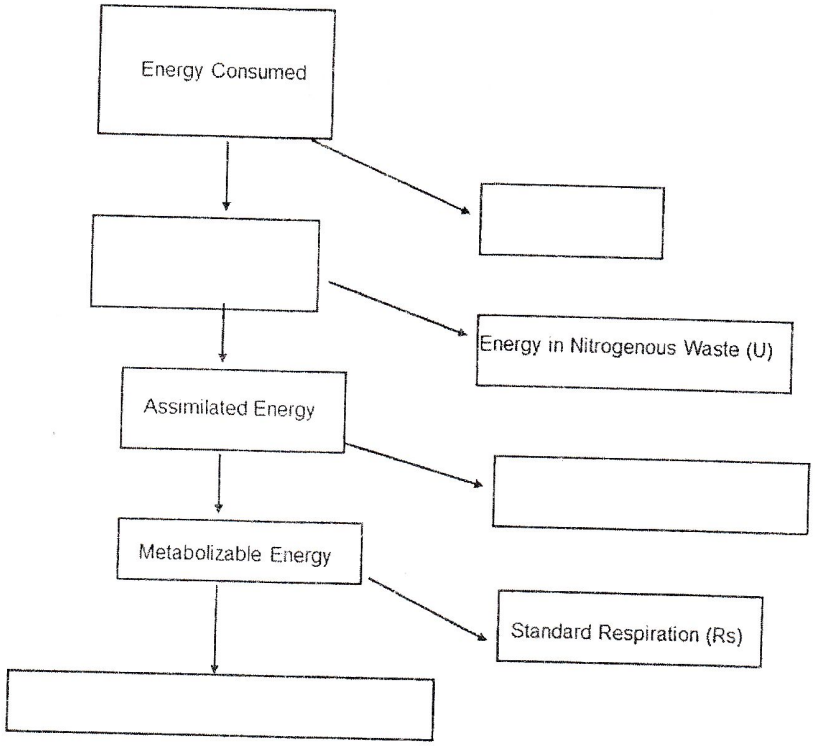
Good Luck

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

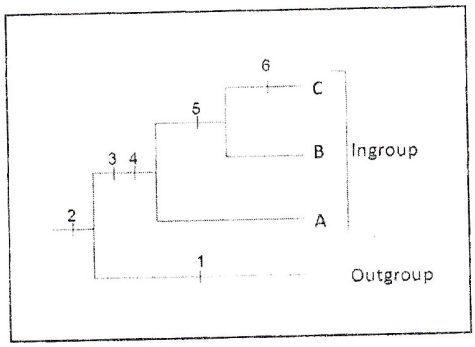
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

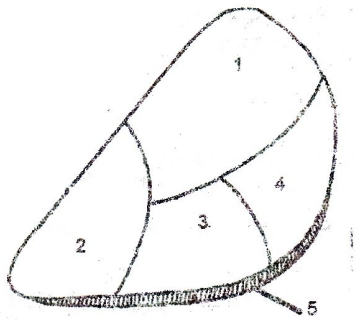
3- Mention the function for TEN only from the following structures: (10 degree)

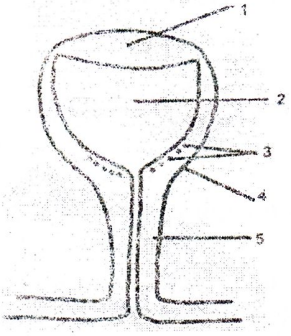
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

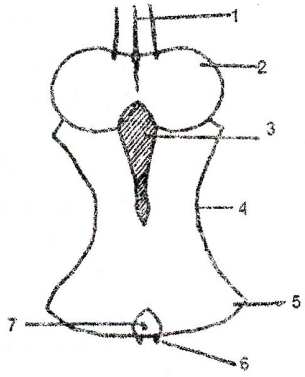
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

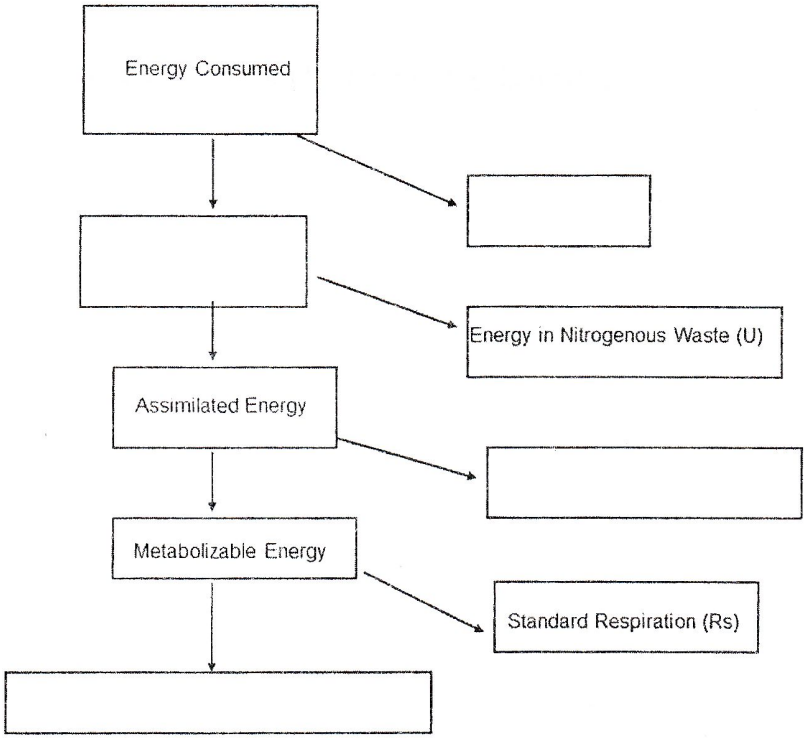
(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

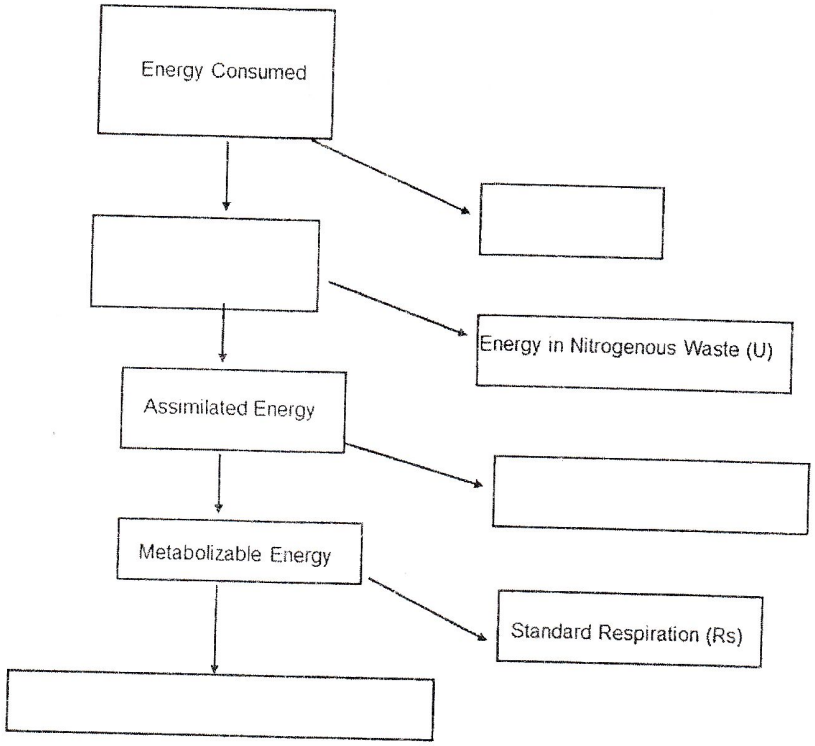
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

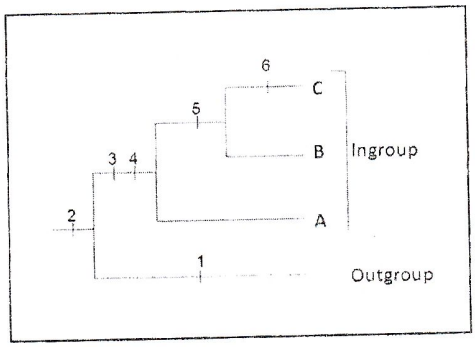
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

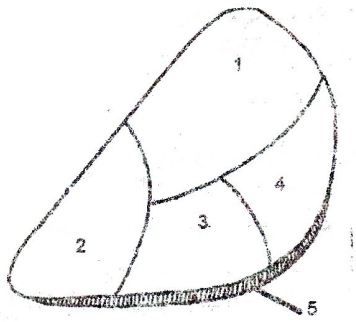
3- Mention the function for TEN only from the following structures: (10 degree)

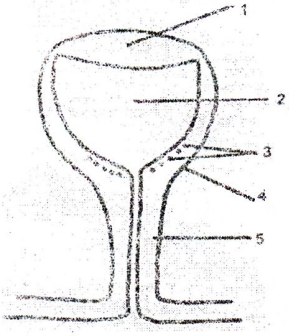
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

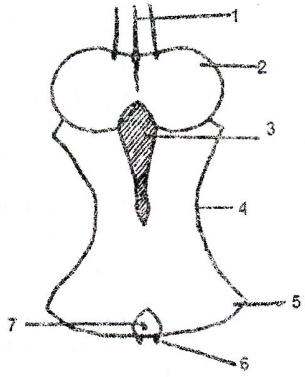
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

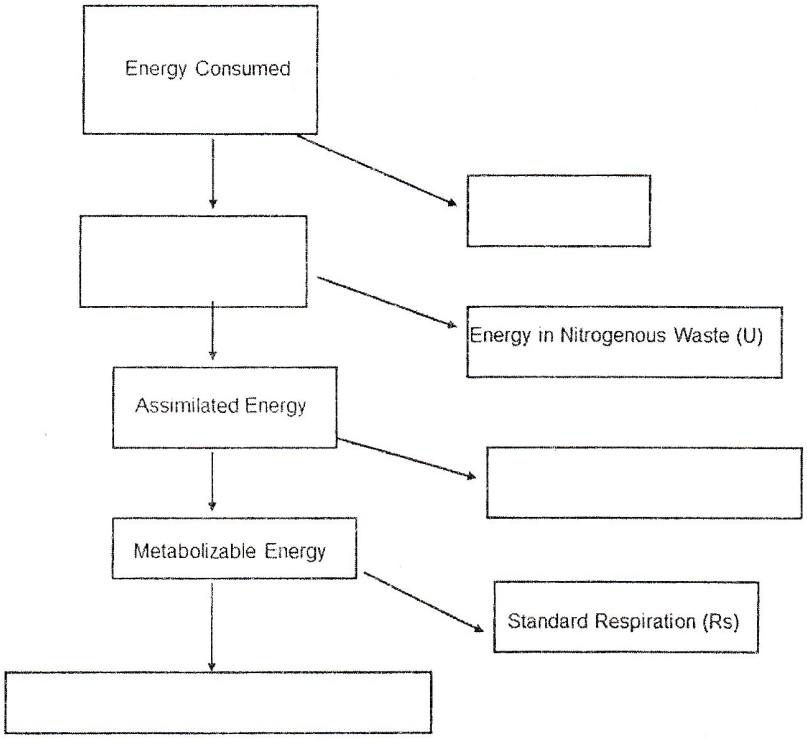
7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

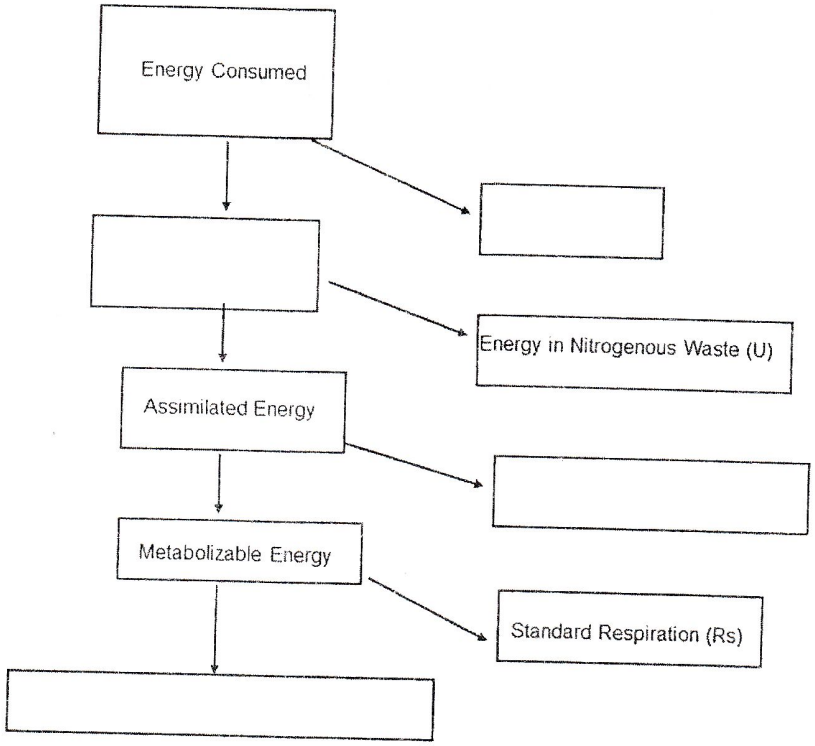
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

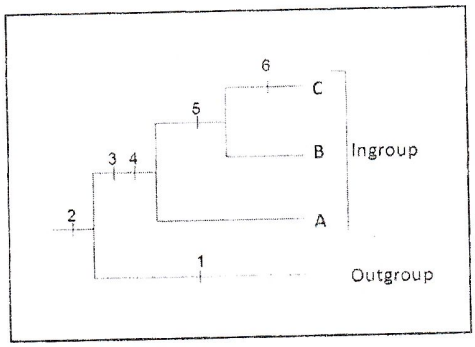
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

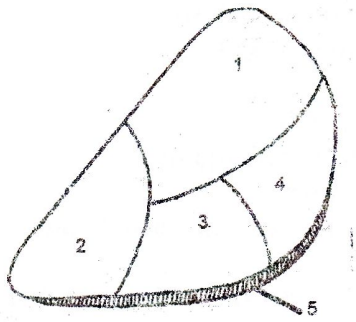
3- Mention the function for TEN only from the following structures: (10 degree)

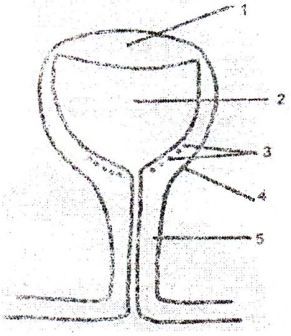
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

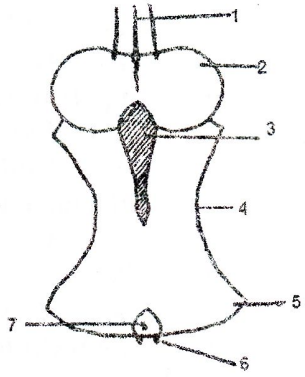
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

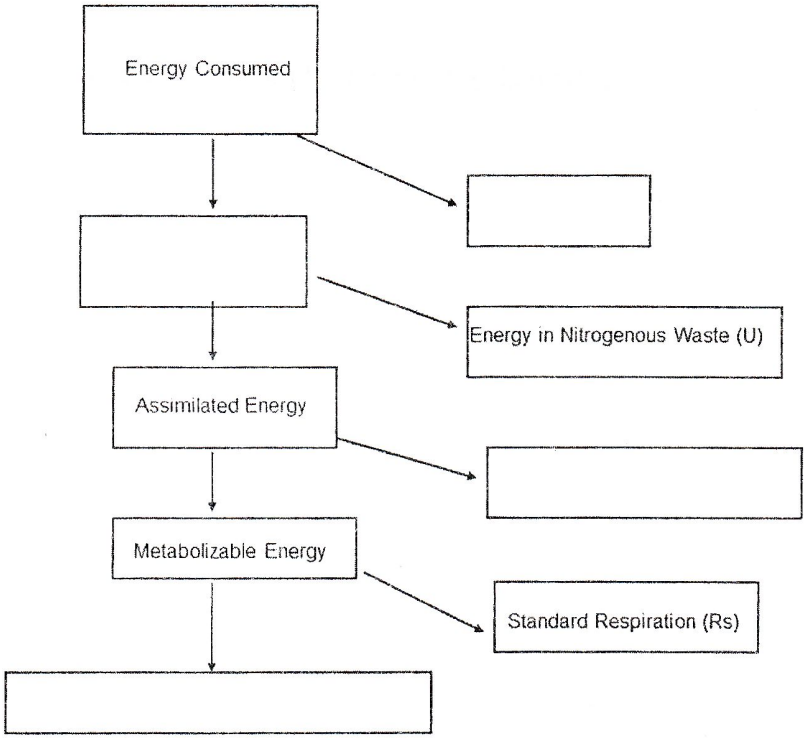
7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

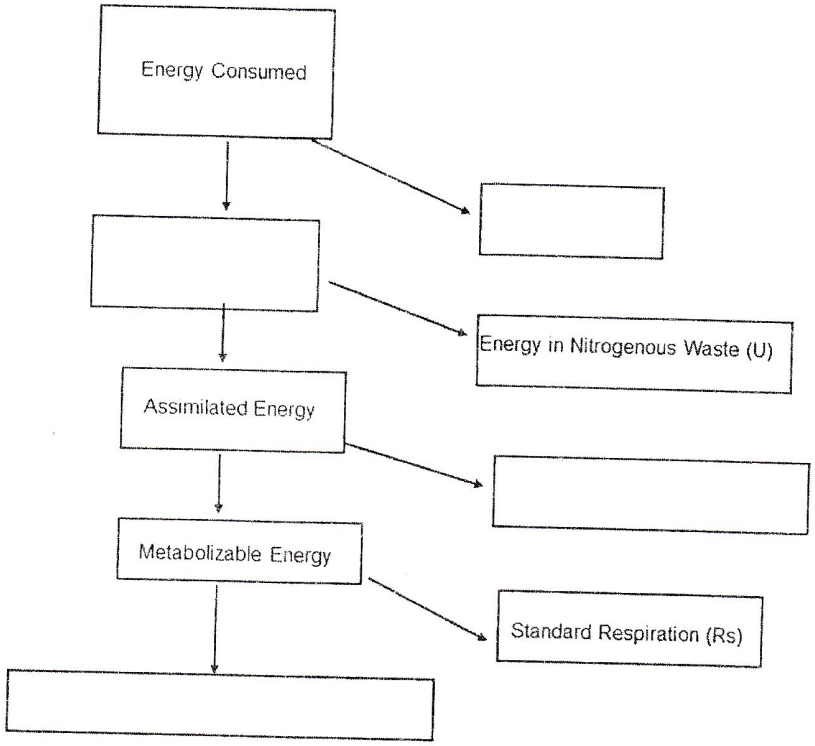
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

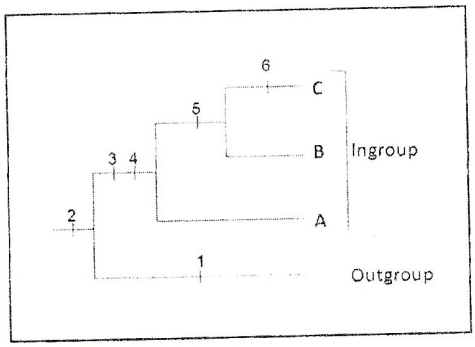
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

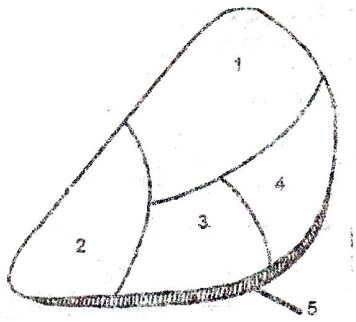
3- Mention the function for TEN only from the following structures: (10 degree)

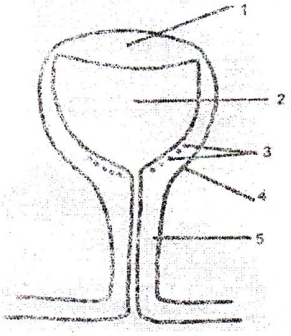
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

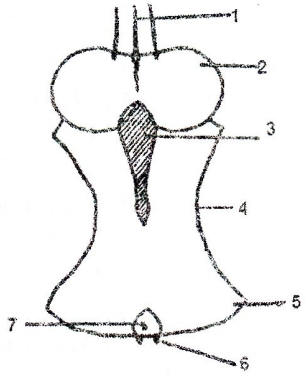
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

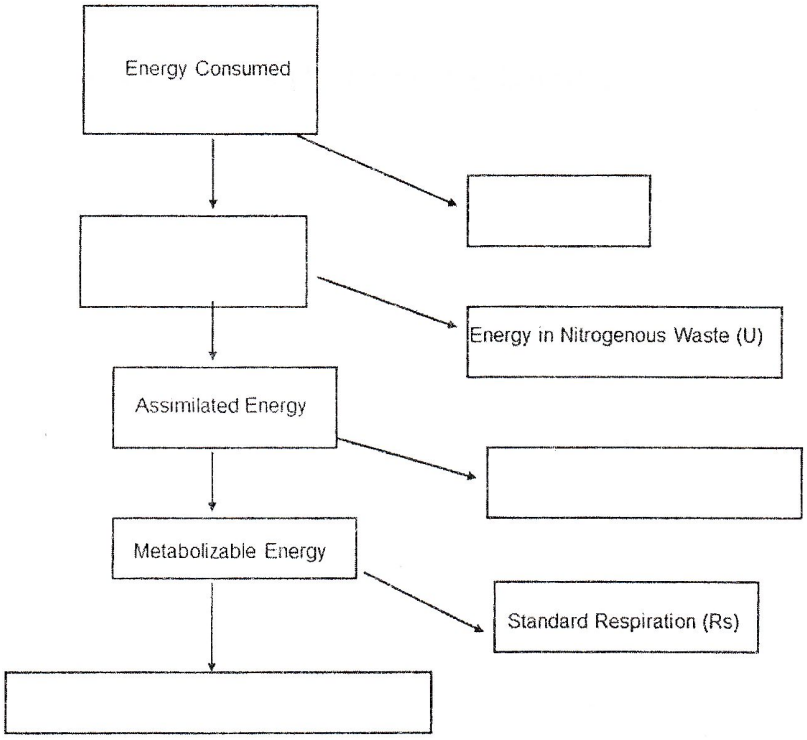
7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

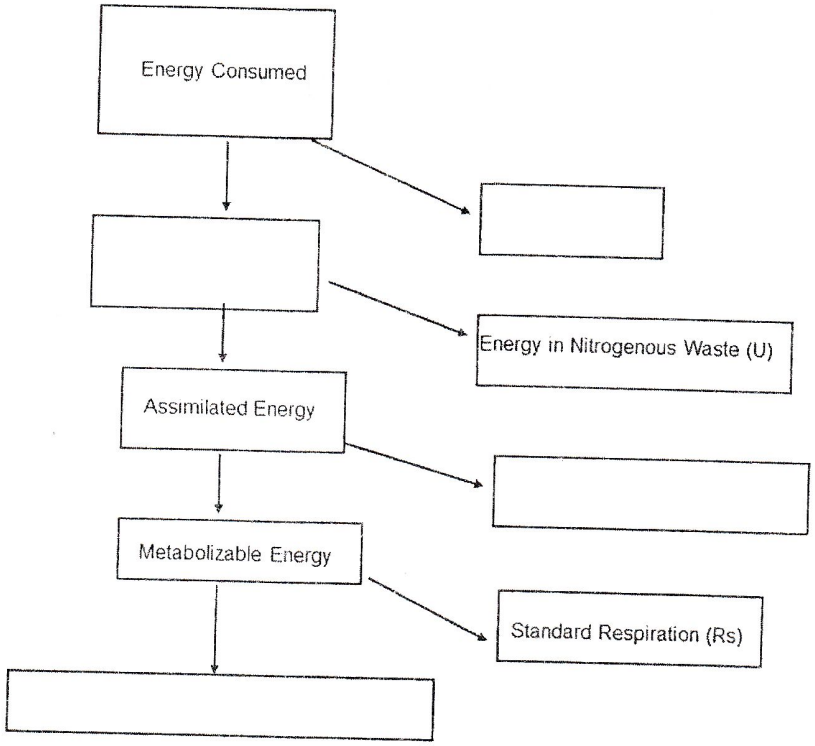
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

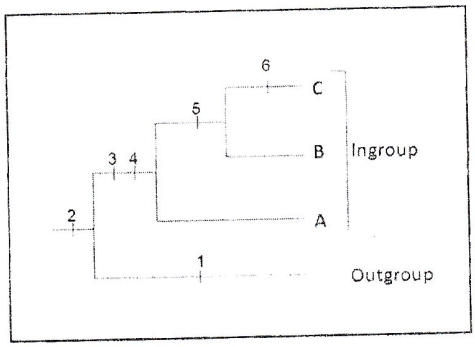
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

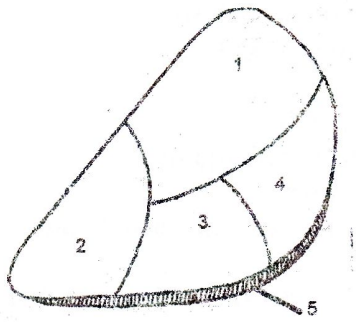
3- Mention the function for TEN only from the following structures: (10 degree)

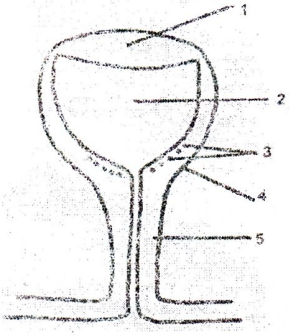
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

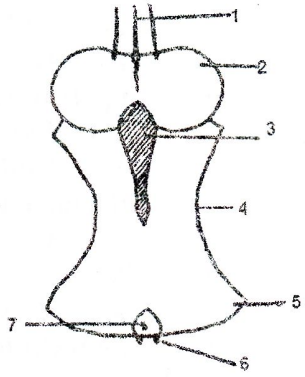
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

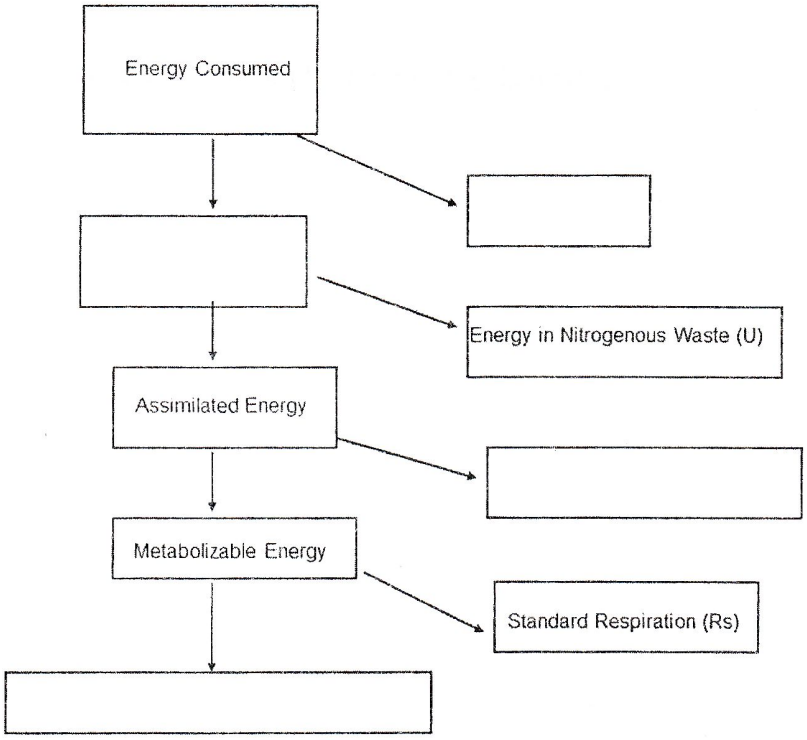
7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

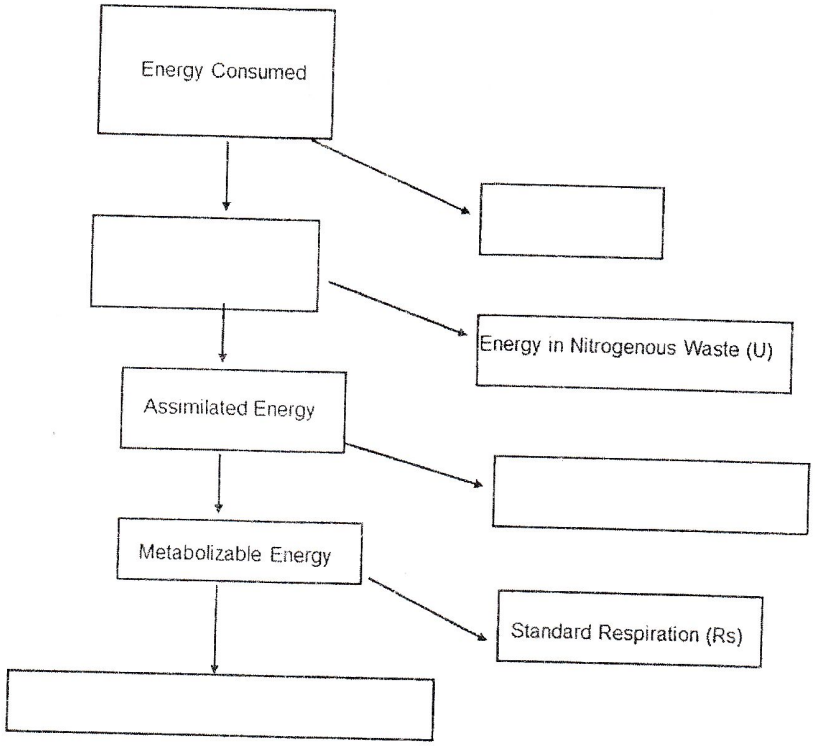
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

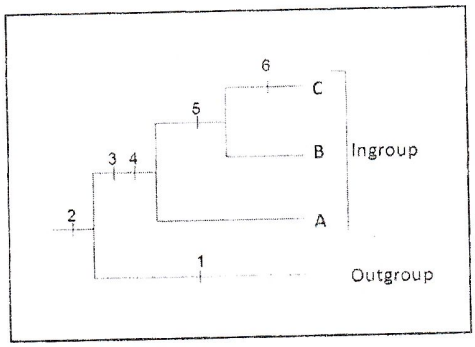
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

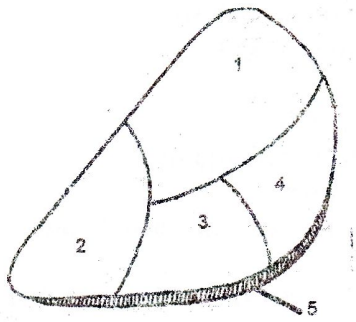
3- Mention the function for TEN only from the following structures: (10 degree)

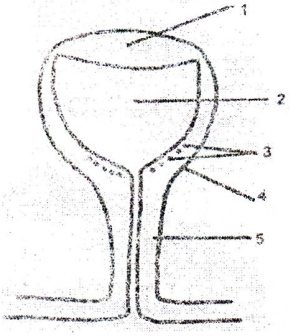
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

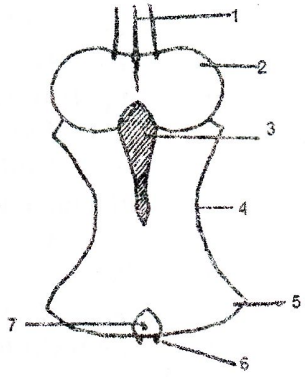
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

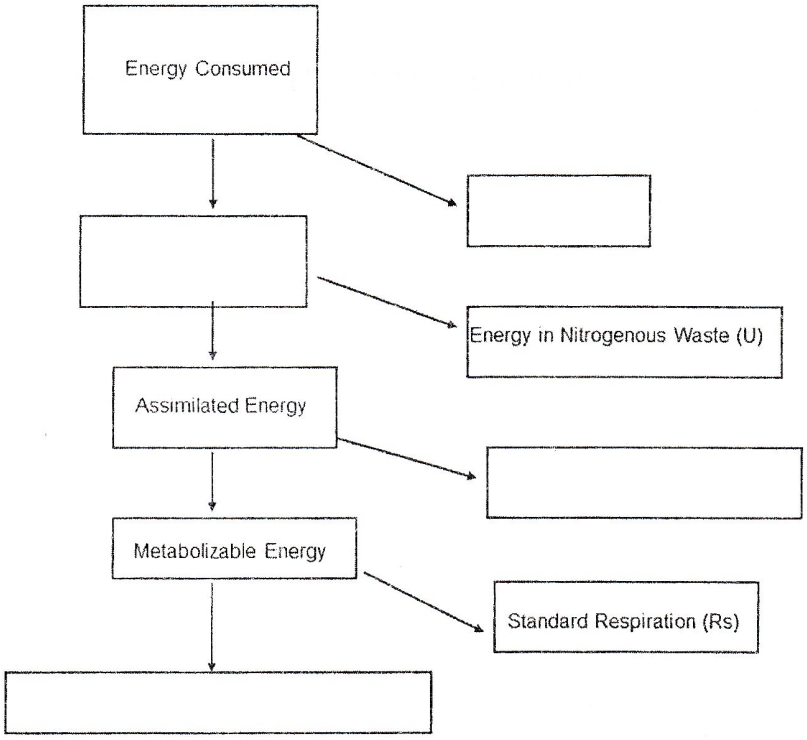
7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

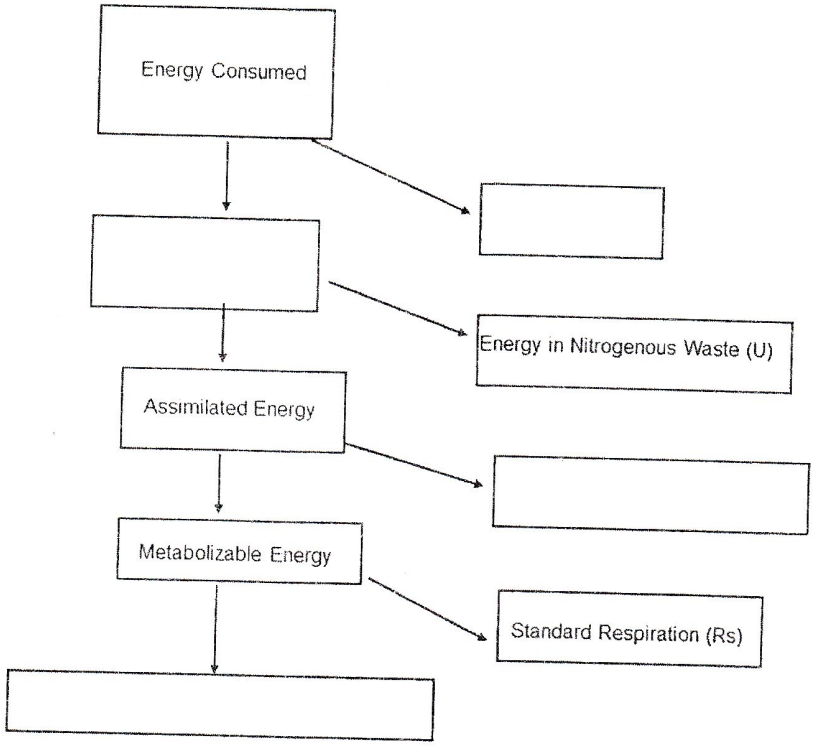
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

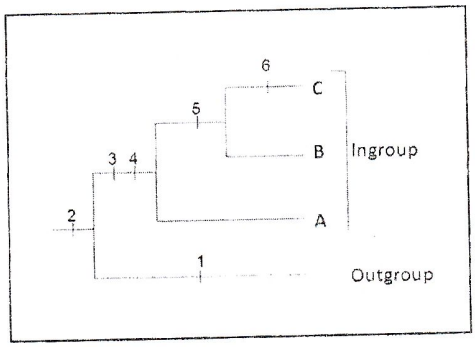
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

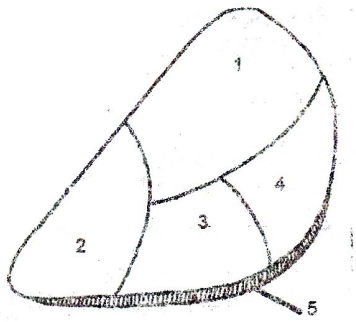
3- Mention the function for TEN only from the following structures: (10 degree)

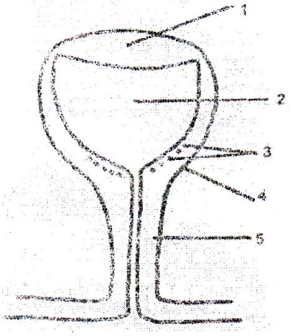
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

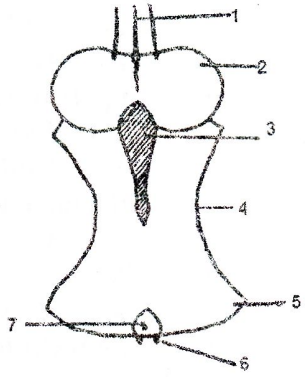
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

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b. .....

c. .....

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a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
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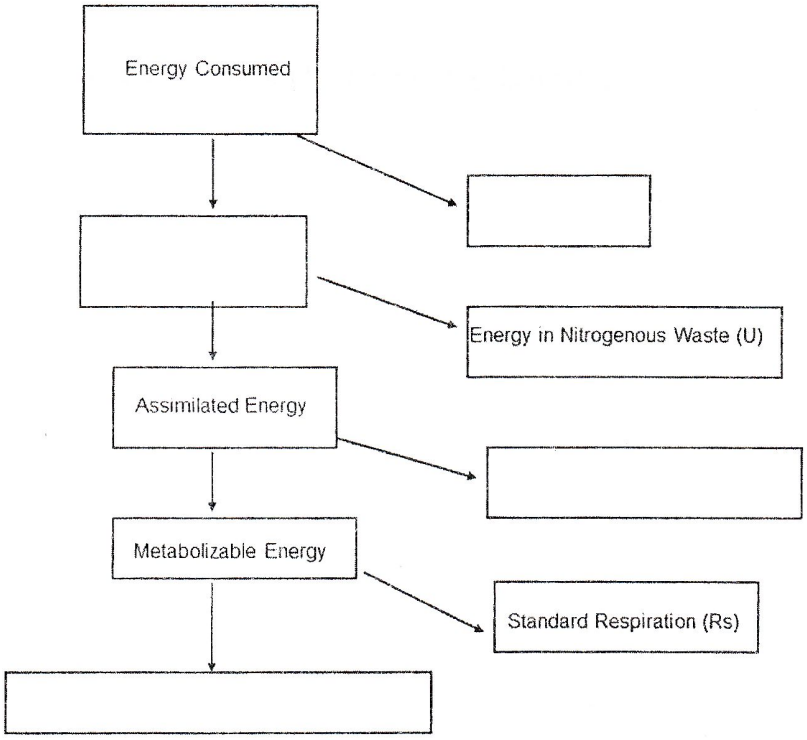
Look at the back of the page for the rest of the exam

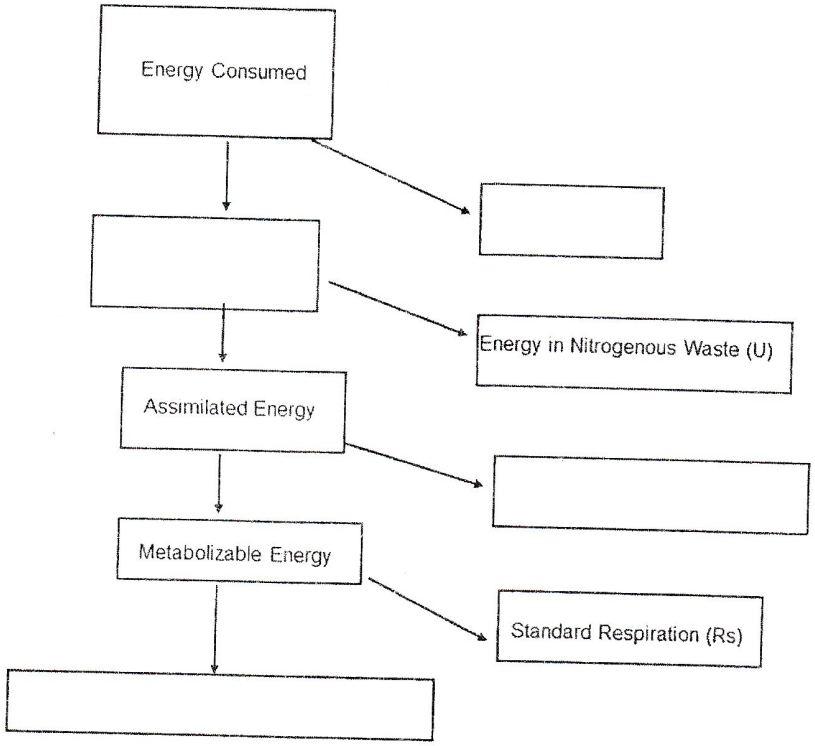
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

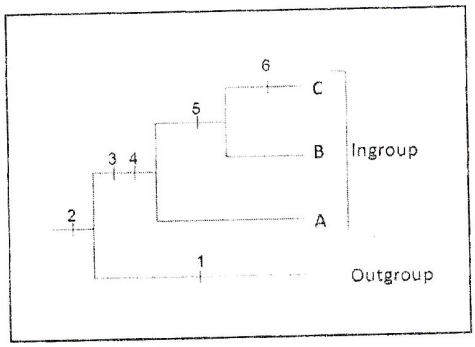
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

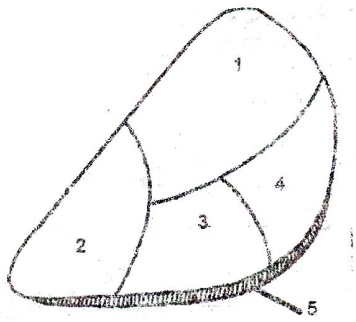
3- Mention the function for TEN only from the following structures: (10 degree)

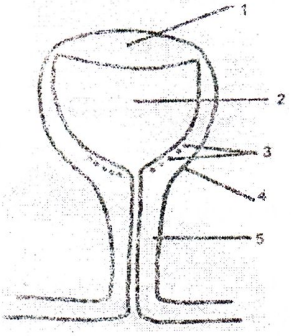
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

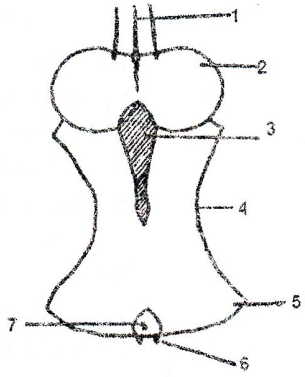
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

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Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
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3. Escape of blood outside the blood vessels or cardiac chambers.	
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6. The cause or causes of any disease.	
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V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
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4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: ....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
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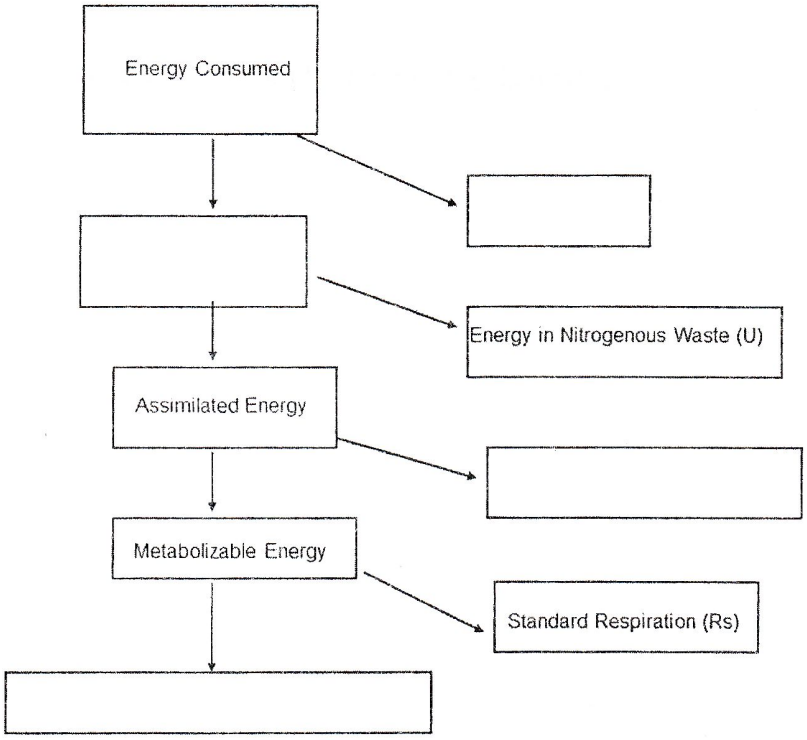
Look at the back of the page for the rest of the exam

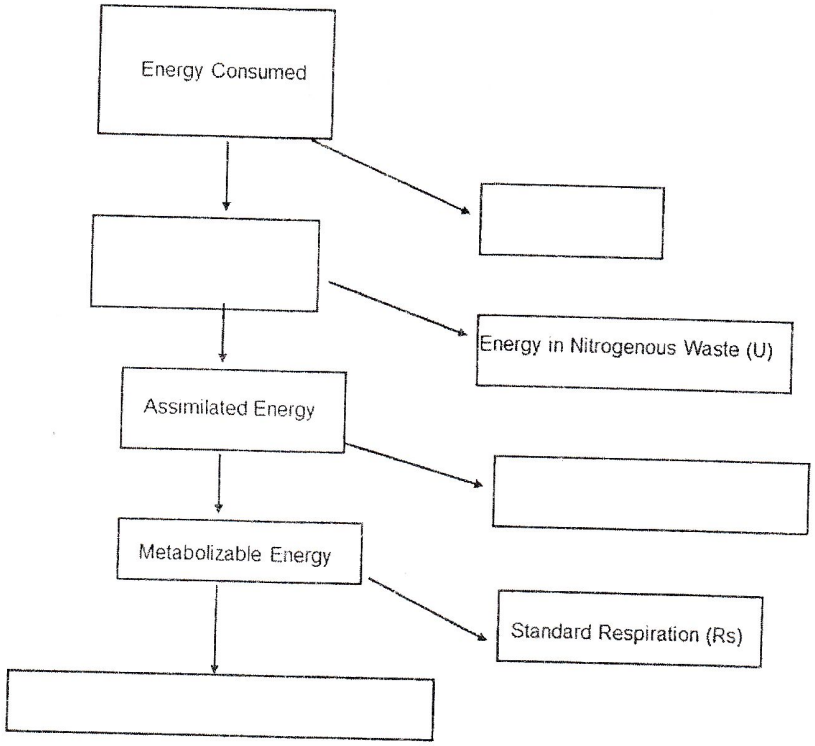
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

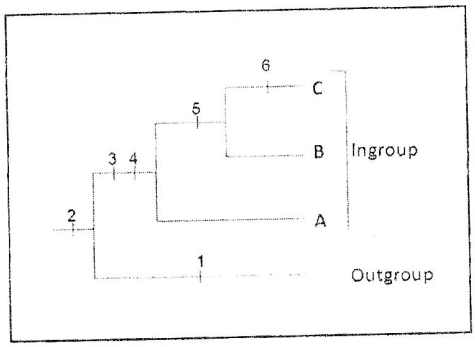
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

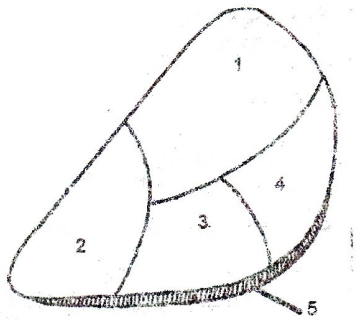
3- Mention the function for TEN only from the following structures: (10 degree)

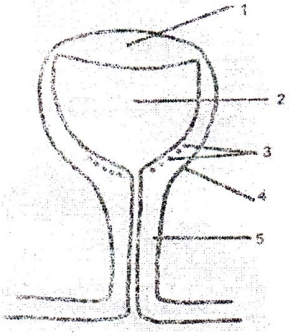
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

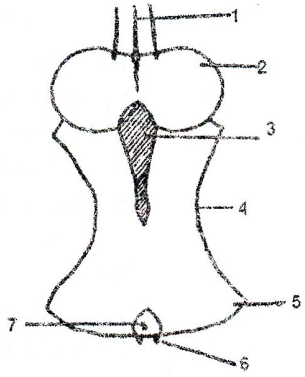
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: .....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

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b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

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2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

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Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

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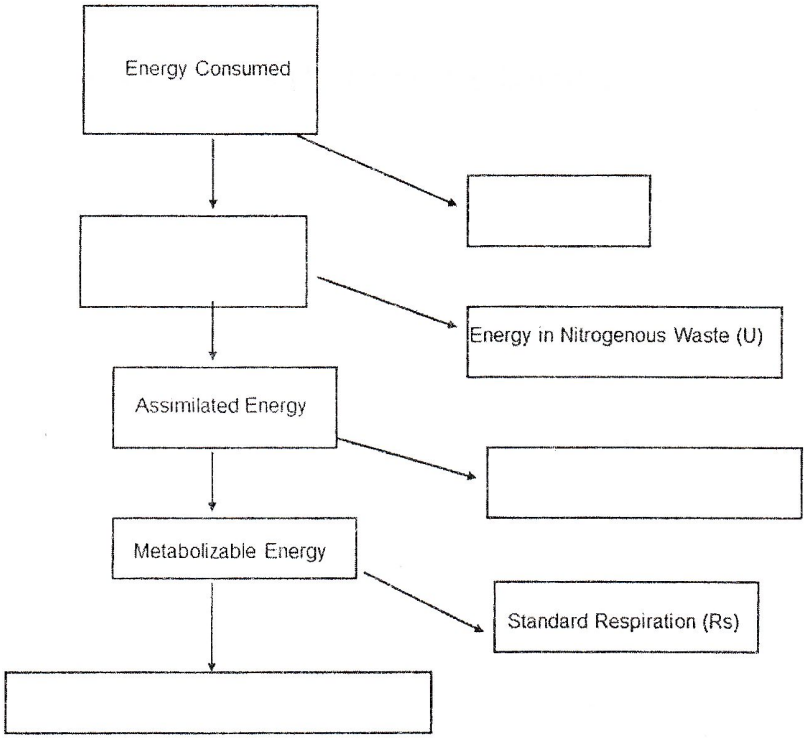
Look at the back of the page for the rest of the exam

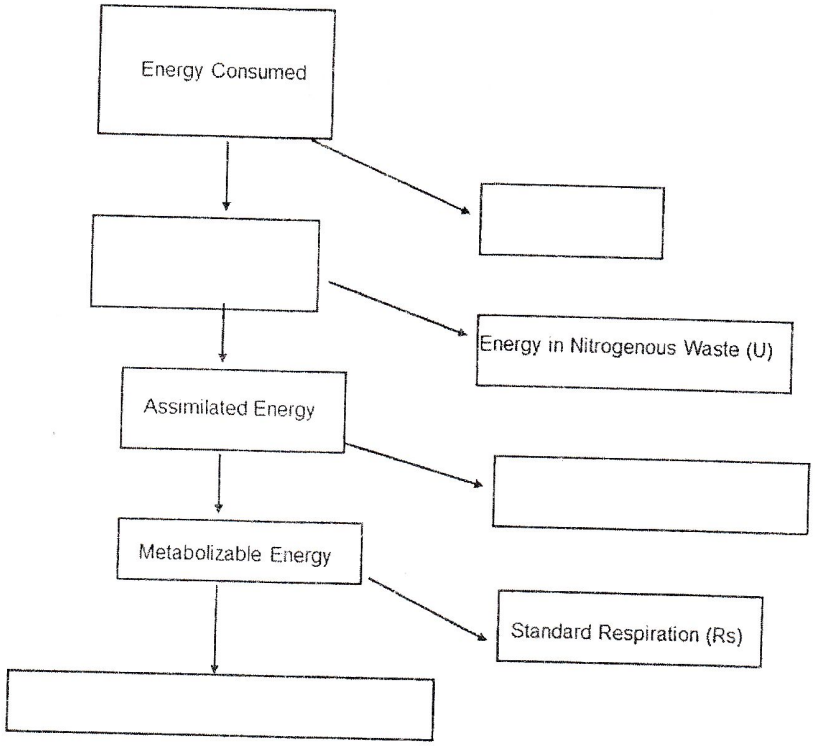
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

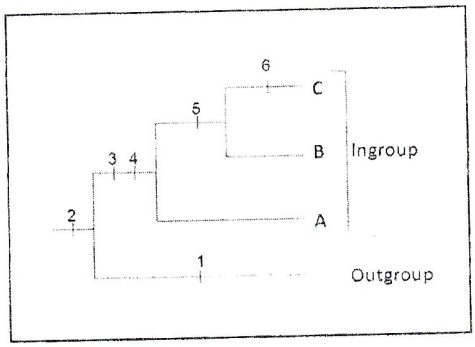
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

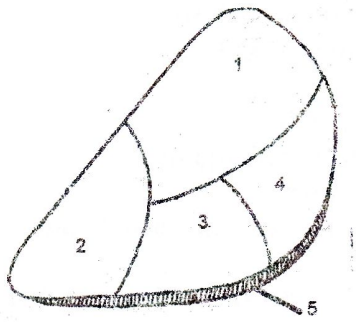
3- Mention the function for TEN only from the following structures: (10 degree)

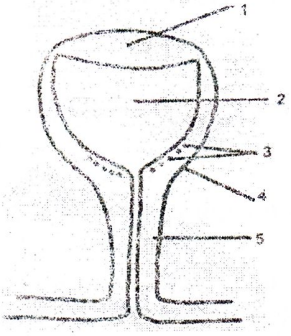
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

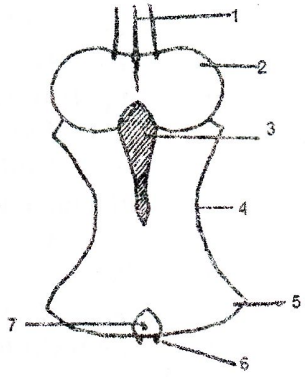
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

Final exam of invertebrate (220Z)2018

Time allowed:Two hours

Answer the following questions

Q1 Choose the correct answer (20 mark one for each)

1). The digestive system (gut) of Cnidaria is made of

a) mesoglea b) epidermis c) mesoderm d) gastrodermis

2- The chain of proglottids is collectively called the _____, and the holdfast or attachment organ is called the

a-strobila, scolex b- scolex, opisthaptor. *c*- opisthaptor, cercaria *d*- cercaria, strobila.

3-Which characteristic makes rotifers different from roundworms?

a. have bilateral symmetry b. have rings of cilia around the mouth c. are pseudocoelomates

d. live in freshwater habitats

4- The parts of the annelid digestion system in the correct order are…

A. Mouth, pharynx, intestine, crop, gizzard, anus
B. Mouth, crop, gizzard, pharynx, intestine, anus
C. Mouth, pharynx, crop, gizzard, intestine, anus
D. Mouth, crop, gizzard, stomach, anus

5-The clitellum is used for all of the following except…

A. acts as a cocoon where the fertilized egg develops
B. Houses the testes and the ovaries
C. secretes a mucus that holds worms in place

6. Schistosomiasis is a disease that humans can contract from exposure to which type flatworm?

a. Trichinella worms b- trematodes c- turbellarian d. cestodes

7-When cattle contract a tapeworm, what have they most likely consumed?

a. water infected by trematodes b. grass that contains proglottid sections

c. soil particles that contain turbellarians d. raw or undercooked pork

8). Hookworms are in the genus __1__ and feed on __2__in the intestine.

a) *Enterobius* ; digested food b) *Necator* ; blood
c) *Necator* ; digested food d) *Enterobius* ; blood

9- Which organelle functions to remove excess water?

a) Micronucleus b) contractile vacuole c) pellicle d) gullet

10- Which of the following is autotrophic?

a) Paramecium b) foraminiferac) ameba d) euglena

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

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9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: .....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

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Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

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Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

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for second year Students (credit hours)
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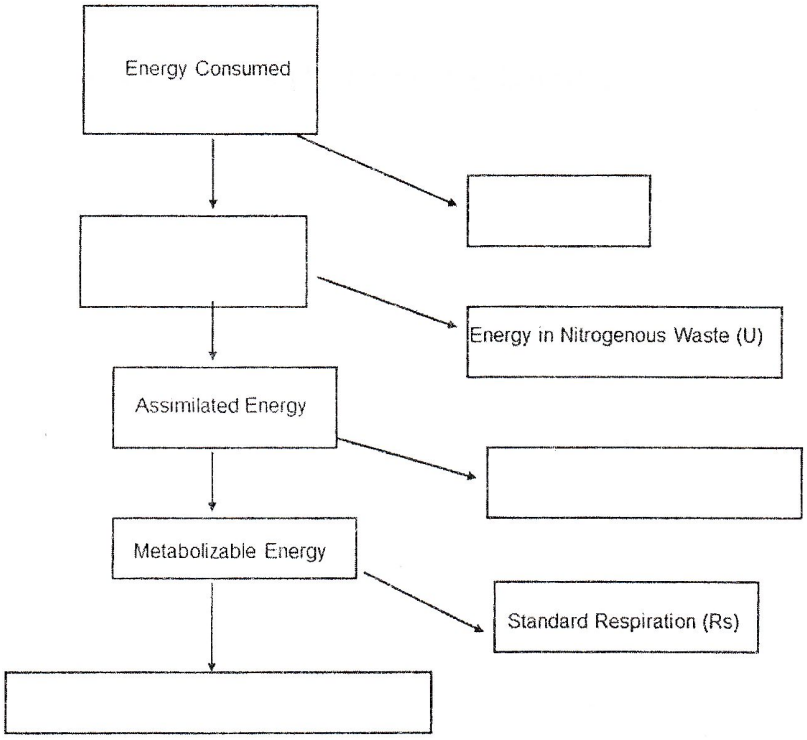
Look at the back of the page for the rest of the exam

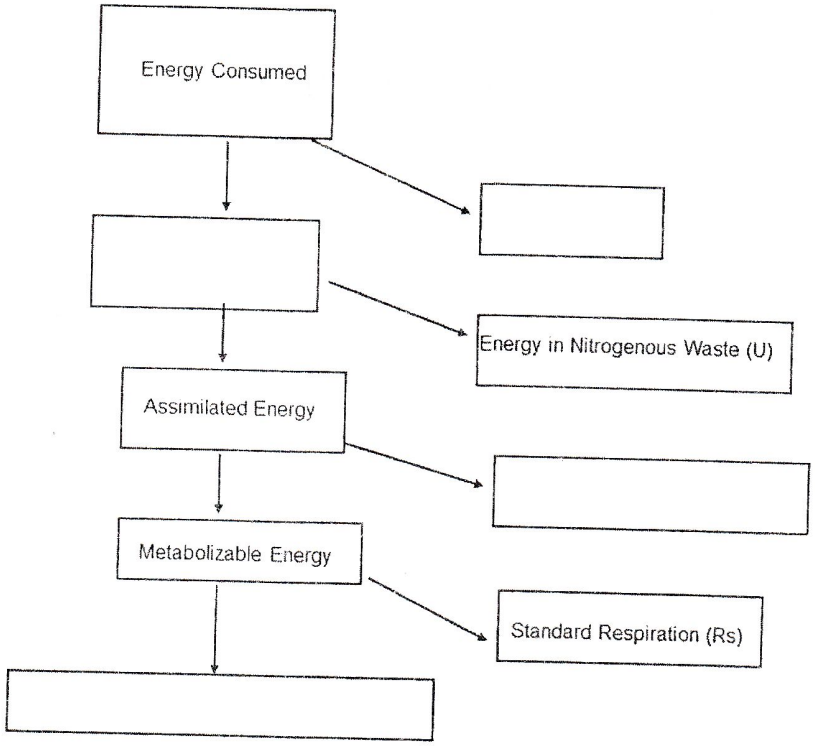
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
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Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

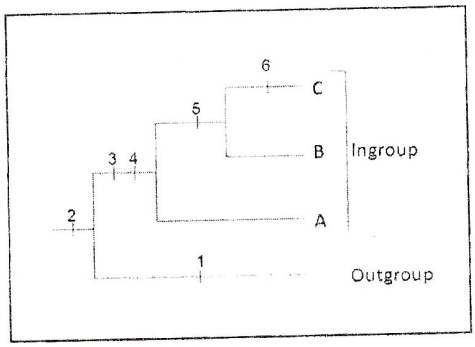
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

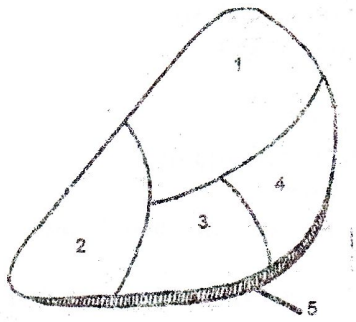
3- Mention the function for TEN only from the following structures: (10 degree)

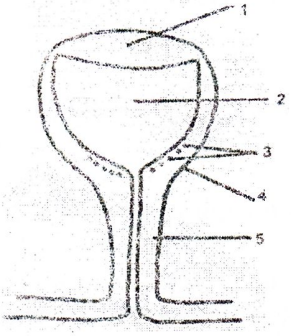
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

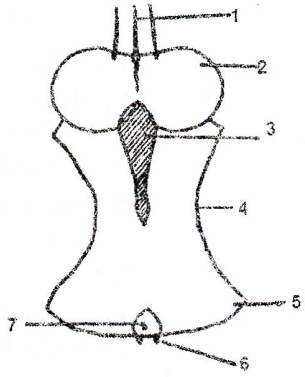
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

11-.Protists are extremely diverse and thus pose a challenge to their classification. Three of the four statements are true concerning protists and their classification. Select the exception

. A) The Kingdom Protista contains unicellular, colonial, and multicellular members

. B) The Kingdom Protista contains autotrophs and heterotrophs.

C) The Kingdom Protista contains members that have chloroplasts

. D) The Kingdom Protista contain eukaryotes and prokaryotes.

12- The cavity of cnidarians is called:
a-Spongocoel b-Gastrovascular cavity c-Haeomocoel **d**-None of these

13- Hydra has no special structures for:
a)Attachment b) Food capture c) Respiration d) Offence and defence

14-Cells of Hydra possessing flagella and pseudopodia are:

a)Nematocysts b) Secretory cellsc)Epitheliomuscular cells d)Nutritivemuscular cell

15-In blastostyles of obelia theperisarc forms

a)Blastotheca b)Hydrotheca c)Gonotheca d)-None of these

16-Some of the nematodes are successful as endoparasites because their bodies are covered by a

a)layer of cilia. b)cyst layer. c)skin with glandular cells.d) nonliving cuticle.

17-The salt and water balance organs found in Platyhelminthes are
a. coelomoducts b. protonephridia. c. pseudonephridia d. Renette Cells

18-In some sponges, asexual reproduction can occur by

a) bud formation b)regeneration following fragmentation
c)formation of gemmules d)all of the above

19-Which of the following statements is <u>TRUE</u>?

a). Tapeworms lack a digestive system

b). A digenetic trematode is one that depends on two or more hosts to complete its life

cycle

c). In nematodes the sexes are generally separate with females being larger than males

d) All the above are true.

20- A strobila is a structure found in the life cycle of members of the class

a) Hydrozoa b) .Scyphozoa. C) Cubozoa d) .Anthozoa

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

Final exam of invertebrate (220Z)2018

Time allowed:Two hours

Answer the following questions

Q1 Choose the correct answer (20 mark one for each)

1). The digestive system (gut) of Cnidaria is made of

a) mesoglea b) epidermis c) mesoderm d) gastrodermis

2- The chain of proglottids is collectively called the _____, and the holdfast or attachment organ is called the

a-strobila, scolex b- scolex, opisthaptor. *c*- opisthaptor, cercaria *d*- cercaria, strobila.

3-Which characteristic makes rotifers different from roundworms?

a. have bilateral symmetry b. have rings of cilia around the mouth c. are pseudocoelomates

d. live in freshwater habitats

4- The parts of the annelid digestion system in the correct order are…

A. Mouth, pharynx, intestine, crop, gizzard, anus
B. Mouth, crop, gizzard, pharynx, intestine, anus
C. Mouth, pharynx, crop, gizzard, intestine, anus
D. Mouth, crop, gizzard, stomach, anus

5-The clitellum is used for all of the following except…

A. acts as a cocoon where the fertilized egg develops
B. Houses the testes and the ovaries
C. secretes a mucus that holds worms in place

6. Schistosomiasis is a disease that humans can contract from exposure to which type flatworm?

a. Trichinella worms b- trematodes c- turbellarian d. cestodes

7-When cattle contract a tapeworm, what have they most likely consumed?

a. water infected by trematodes b. grass that contains proglottid sections

c. soil particles that contain turbellarians d. raw or undercooked pork

8). Hookworms are in the genus __1__ and feed on __2__in the intestine.

a) *Enterobius* ; digested food b) *Necator* ; blood
c) *Necator* ; digested food d) *Enterobius* ; blood

9- Which organelle functions to remove excess water?

a) Micronucleus b) contractile vacuole c) pellicle d) gullet

10- Which of the following is autotrophic?

a) Paramecium b) foraminiferac) ameba d) euglena

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

Final exam of invertebrate (220Z)2018

Time allowed:Two hours

Answer the following questions

Q1 Choose the correct answer (20 mark one for each)

1). The digestive system (gut) of Cnidaria is made of

a) mesoglea b) epidermis c) mesoderm d) gastrodermis

2- The chain of proglottids is collectively called the _____, and the holdfast or attachment organ is called the

a-strobila, scolex b- scolex, opisthaptor. *c*- opisthaptor, cercaria *d*- cercaria, strobila.

3-Which characteristic makes rotifers different from roundworms?

a. have bilateral symmetry b. have rings of cilia around the mouth c. are pseudocoelomates

d. live in freshwater habitats

4- The parts of the annelid digestion system in the correct order are…

A. Mouth, pharynx, intestine, crop, gizzard, anus
B. Mouth, crop, gizzard, pharynx, intestine, anus
C. Mouth, pharynx, crop, gizzard, intestine, anus
D. Mouth, crop, gizzard, stomach, anus

5-The clitellum is used for all of the following except…

A. acts as a cocoon where the fertilized egg develops
B. Houses the testes and the ovaries
C. secretes a mucus that holds worms in place

6. Schistosomiasis is a disease that humans can contract from exposure to which type flatworm?

a. Trichinella worms b- trematodes c- turbellarian d. cestodes

7-When cattle contract a tapeworm, what have they most likely consumed?

a. water infected by trematodes b. grass that contains proglottid sections

c. soil particles that contain turbellarians d. raw or undercooked pork

8). Hookworms are in the genus __1__ and feed on __2__in the intestine.

a) *Enterobius* ; digested food b) *Necator* ; blood
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9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: .....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

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Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
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2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
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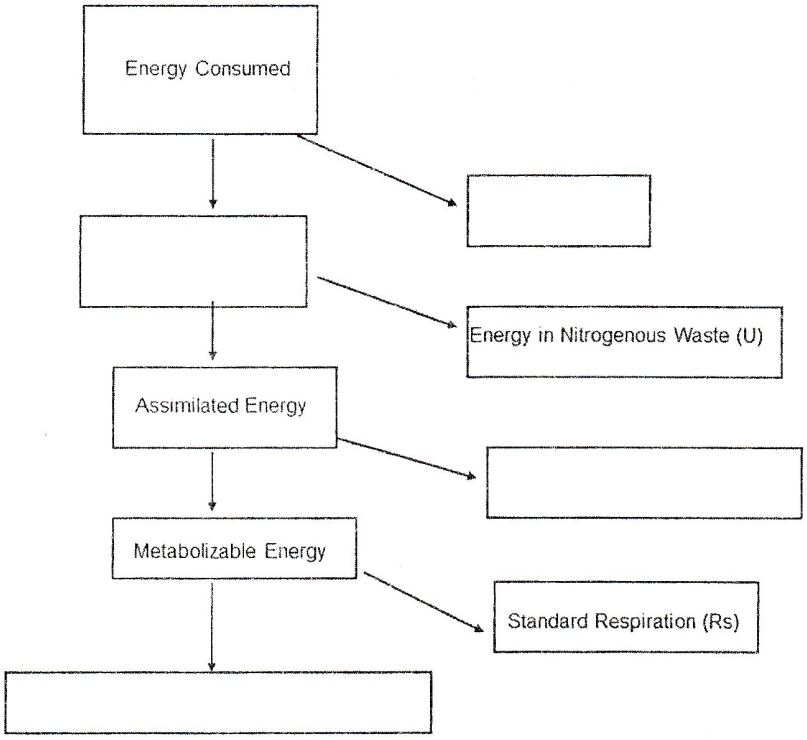
Look at the back of the page for the rest of the exam

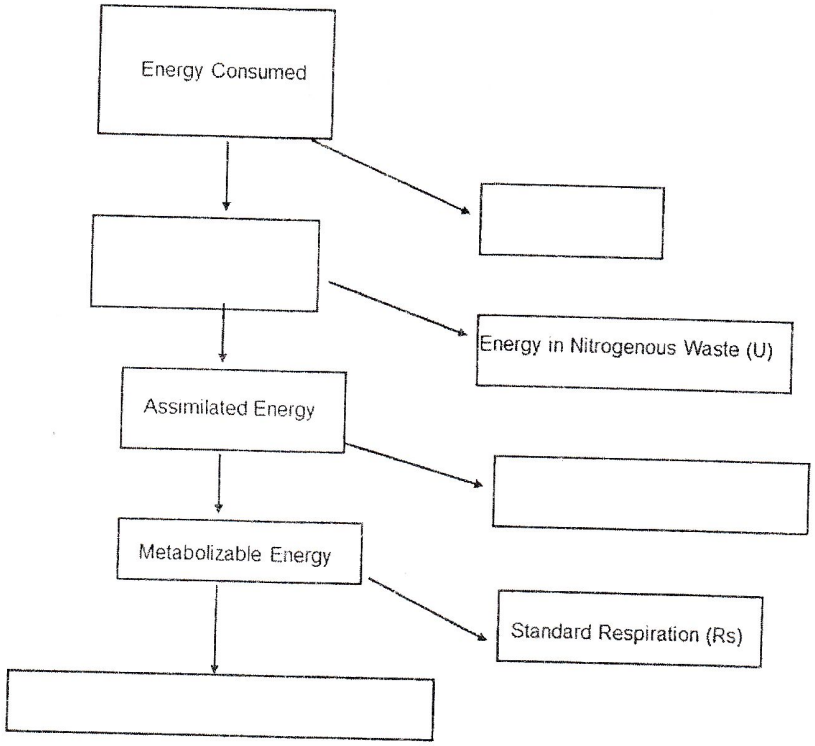
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

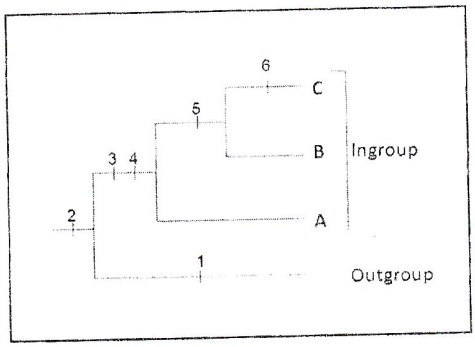
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

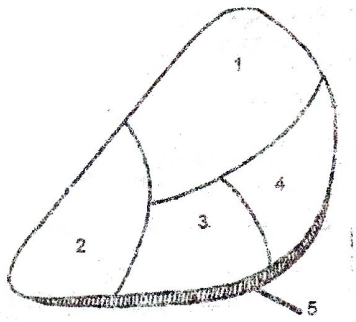
3- Mention the function for TEN only from the following structures: (10 degree)

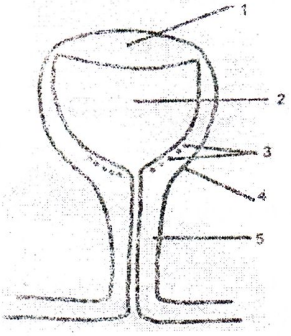
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

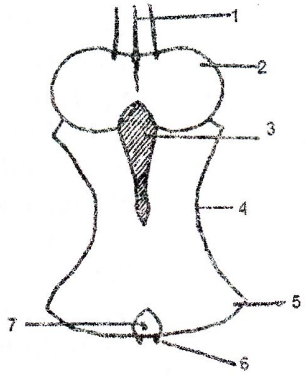
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck

Q2-Write the Scientific term (10 mark one for each)

1-Common name for the phylum Ctenophora.

2- Excretion cells in the phlyumNematoda.

3-Structure in parasitic flatworms used for protection in a parasitic environment, like an intestine flagellated cells that line the canals of the sponge4-

5-Phylum linked between parazoa and metazoa

6- Structures in free-living flatworms that excrete mucus for movement

7- Excretion cells in the phylum Platyhelminthes

8-In many anemones, the edges of the septa are extended into thread like structures that contain nematocysts and gland cells. These structures are called

9--Large central canal of sponge where porocytes open to
10-- A term that refers to Cnidaria and the Cnetophora

Q3-With labbllingdrawing illustrate four only (8 mark2 for each)

1-Body plane ofMonogenea

2-Structure of excreation unit of Annilida

3- Pody plan of placozoa

4-Body plane of Phylum Nematoda

5- Polyp form and medosa form

Q4- Answer the threeonly following questions (12 mark4 for each)

1- Demonstrate Ascaris life cycle in human-

2- Compare between classes of phylum Annilida

3-How trematods adapted for parasitism

4-Demonstrate Plasmodium life cycle in human

Good luck

أ.د/ أزهار حسين محمد

11-.Protists are extremely diverse and thus pose a challenge to their classification. Three of the four statements are true concerning protists and their classification. Select the exception

. A) The Kingdom Protista contains unicellular, colonial, and multicellular members

. B) The Kingdom Protista contains autotrophs and heterotrophs.

C) The Kingdom Protista contains members that have chloroplasts

. D) The Kingdom Protista contain eukaryotes and prokaryotes.

12- The cavity of cnidarians is called:
a-Spongocoel b-Gastrovascular cavity c-Haeomocoel **d**-None of these

13- Hydra has no special structures for:
a)Attachment b) Food capture c) Respiration d) Offence and defence

14-Cells of Hydra possessing flagella and pseudopodia are:

a)Nematocysts b) Secretory cellsc)Epitheliomuscular cells d)Nutritivemuscular cell

15-In blastostyles of obelia theperisarc forms

a)Blastotheca b)Hydrotheca c)Gonotheca d)-None of these

16-Some of the nematodes are successful as endoparasites because their bodies are covered by a

a)layer of cilia. b)cyst layer. c)skin with glandular cells.d) nonliving cuticle.

17-The salt and water balance organs found in Platyhelminthes are
a. coelomoducts b. protonephridia. c. pseudonephridia d. Renette Cells

18-In some sponges, asexual reproduction can occur by

a) bud formation b)regeneration following fragmentation
c)formation of gemmules d)all of the above

19-Which of the following statements is <u>TRUE</u>?

a). Tapeworms lack a digestive system

b). A digenetic trematode is one that depends on two or more hosts to complete its life

cycle

c). In nematodes the sexes are generally separate with females being larger than males

d) All the above are true.

20- A strobila is a structure found in the life cycle of members of the class

a) Hydrozoa b) .Scyphozoa. C) Cubozoa d) .Anthozoa

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

Final exam of invertebrate (220Z)2018

Time allowed:Two hours

Answer the following questions

Q1 Choose the correct answer (20 mark one for each)

1). The digestive system (gut) of Cnidaria is made of

a) mesoglea b) epidermis c) mesoderm d) gastrodermis

2- The chain of proglottids is collectively called the _____, and the holdfast or attachment organ is called the

a-strobila, scolex b- scolex, opisthaptor. *c*- opisthaptor, cercaria *d*- cercaria, strobila.

3-Which characteristic makes rotifers different from roundworms?

a. have bilateral symmetry b. have rings of cilia around the mouth c. are pseudocoelomates

d. live in freshwater habitats

4- The parts of the annelid digestion system in the correct order are…

A. Mouth, pharynx, intestine, crop, gizzard, anus
B. Mouth, crop, gizzard, pharynx, intestine, anus
C. Mouth, pharynx, crop, gizzard, intestine, anus
D. Mouth, crop, gizzard, stomach, anus

5-The clitellum is used for all of the following except…

A. acts as a cocoon where the fertilized egg develops
B. Houses the testes and the ovaries
C. secretes a mucus that holds worms in place

6. Schistosomiasis is a disease that humans can contract from exposure to which type flatworm?

a. Trichinella worms b- trematodes c- turbellarian d. cestodes

7-When cattle contract a tapeworm, what have they most likely consumed?

a. water infected by trematodes b. grass that contains proglottid sections

c. soil particles that contain turbellarians d. raw or undercooked pork

8). Hookworms are in the genus __1__ and feed on __2__in the intestine.

a) *Enterobius* ; digested food b) *Necator* ; blood
c) *Necator* ; digested food d) *Enterobius* ; blood

9- Which organelle functions to remove excess water?

a) Micronucleus b) contractile vacuole c) pellicle d) gullet

10- Which of the following is autotrophic?

a) Paramecium b) foraminiferac) ameba d) euglena

Dept. of Zoology

Faculty of Science

Total make 50

Assiut University

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9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
b. Histiocyte
c. Langerhans cell
d. Microglia

10- Which of the following is forming a myelin in the peripheral nervous system?

a. Schwan cell
b. Basket cell
c. Neuroglia
d. Ganglion

II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

2- The functions of fixed macrophage are:

a. ....., b. ....., c. .....

3- The two types of mucous secretory glands are:

a. ..... b. .....

4- The two types of mast cells are:

a. ..... b. .....

5- The two types of fat cells are:

a. ..... b. .....

6- Osteoclast cells are formed by fusion of: .....

7- Naked nerve fiber means .....

8- In a neuron, the rough endoplasmic reticulum is termed .....

9- The tubulo-acinar glands are classified into:

a. ..... b. .....

III. Answer only ONE of the followings with drawings (5 Marks)

1- Types and functions of neuroglia proper
2- Difference between spinal and sympathetic ganglia

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
2. Increase in the number of the cells.	
3. Escape of blood outside the blood vessels or cardiac chambers.	
4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
7. The mechanism for development of the disease.	
8. Accumulation of excess water inside the cells	
9. Accumulation of excess neutral fat in parenchymatous cells	
10. Local death of cells or tissues within living body.	

V- Mention whether each of the following statements is true (T) or false (F) and correct the false ones (5 Marks)

SN	Statement	T or F
1.	Fatty changes are characterized by swelling of the cell and granularity of the cytoplasm.	
2.	In karyorrhexis, the nucleus appears to dissolve and fails to take the stain due to chromatic hydrolysis.	
3.	In amoebic abscess, the central necrotic core is liquefied by the proteolytic enzymes released from the pus cells.	
4.	Coagulative necrosis occurs in brain and spinal cord.	
5.	Metaplasia is a stable change to another cell type.	

Look at the back of the page for the rest of the exam

VI- **Complete the following statements**

1- Inflammation is defined as .....

..... (2 Marks)

2- Granuloma is defined as .....

..... (2 Marks)

3- Causes of cloudy swelling are: (3 Marks)

a. .....

b. .....

c. .....

4- Types of inflammation include: (3 Marks)

a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

Final Exam of Histology & Histopathology (212Z)
for second year Students (credit hours)
Part I – Histology

I-Choose the most appropriate answer for each of the following statements: (10 Marks)

1- What is the shape of the epithelial cells in a mesothelium?
   a. Squamous
   b. Cuboidal
   c. Stratified
   d. Columnar

2- Which muscle type consists of long, cylindrical cells with multiple nuclei located at the periphery of the cell?
   a. Smooth
   b. Skeletal
   c. Cardiac
   d. All are correct

3- Which type of tissue forms glands?
   a. Epithelial
   b. Nervous
   c. Connective
   d. Muscular

4- The minute passageways in the bony matrix that allow osteocytes to communicate with each other are called:
   a. Lamellae
   b. Osteons
   c. Lacunae
   d. Canaliculi

5- The two types of cells which exist in nervous tissue are:
   a. Dendrites and axons
   b. Satellite cells and neurons
   c. Nerve processes and nerve fibers
   d. Neurons and glia cells

6- What is the surface modification seen on the cells of the epididymis?
   a- Microvilli
   b- Stereocilia
   c- Cilia
   d- Both a & b

7- Which of the following is NOT a fiber found in connective tissue?
   a. Collagen fiber
   b. Reticular fiber
   c. Elastic fiber
   d. Purkinje fiber

8- Which fiber type has more myoglobin?
   a- Red fibers
   b- .White fibers
   c- Intermediate fibers
   d- All of the above

Look at the back of the page for the rest of the exam

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a. .....

b. .....

c. .....

Name of the examiner: Prof. Bothaina M. Khidr

Best wishes

Part II (Histopathology)

IV- Write the scientific term for the following sentences in column B (10 Marks)

A	B
1. Reduction in the size of the cell	
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4. new healthy tissue is replacing the damaged one	
5. The nucleus shrinks, its chromatin becomes dense and it stains darkly	
6. The cause or causes of any disease.	
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9- Which cell is a connective tissue fixed macrophage?

a. Kupffer cells
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II- Complete the followings: (10 Marks)

1- The function of fibroblasts are:

a. ....., b. ....., c. .....

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III. Answer only ONE of the followings with drawings (5 Marks)

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2- Difference between spinal and sympathetic ganglia

Assiut University
Faculty of Science
Department of Zoology
Date: 10th May 2018
Time: 2 hours

كلية العلوم
قسم علم الحيوان

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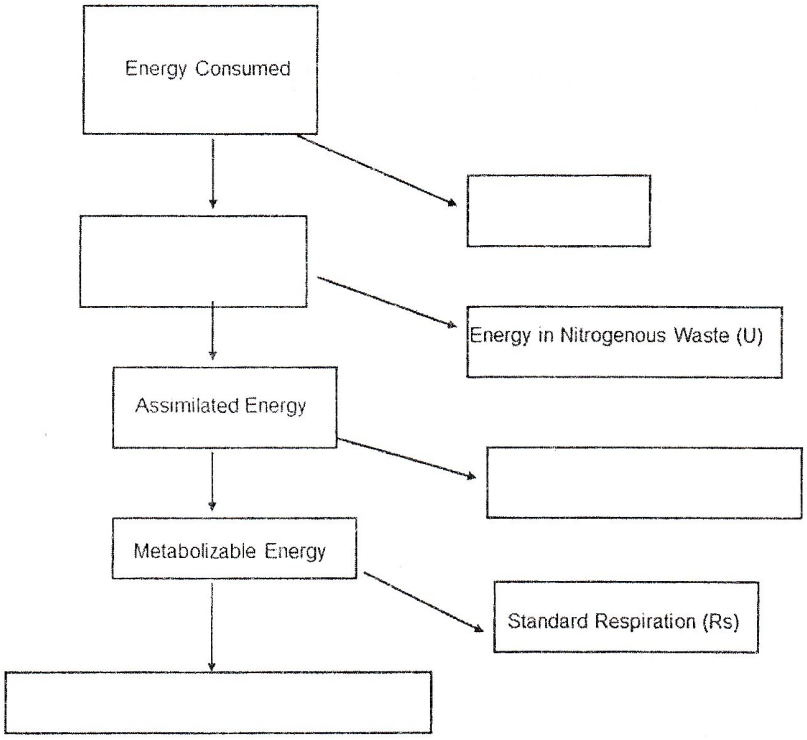
Look at the back of the page for the rest of the exam

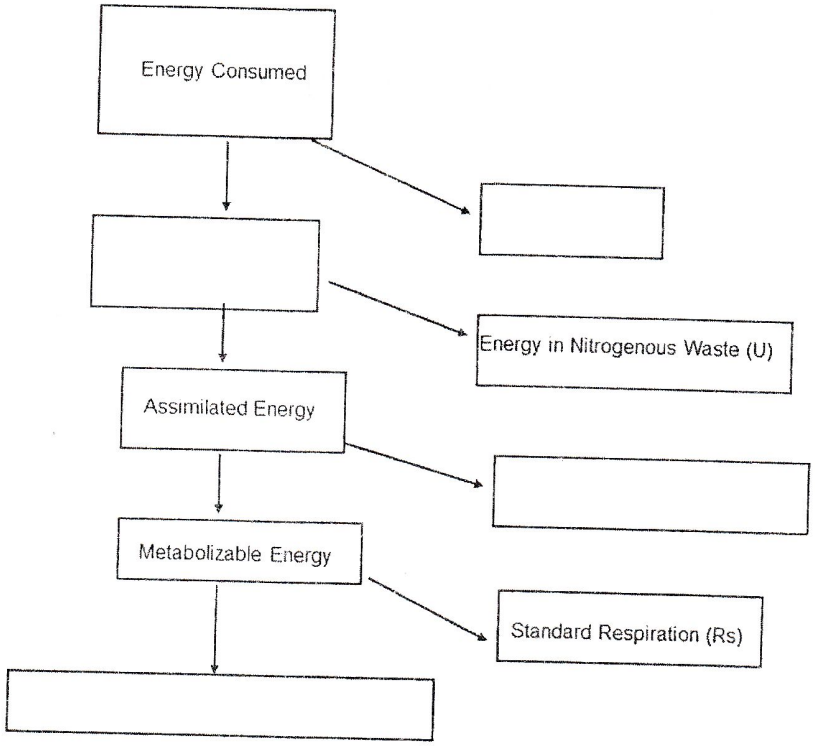
7. **Summarize the evolutionary trends of fish scales? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

Bioenergetic Hierarchy



6. **Mention the equations used in back-calculation of fish length and mention the assumption on which back-calculations from rings of fish scales are based? (2 marks)**

4. Enumerate the methods of growth rate measurements with criteria of back-calculations? (2 marks)

5. Complete the following flowchart and write the equation expressing it? (2 marks)

2. Write short notes on types and causes of fish migrations? (3 marks)

3. How do sharks osmoregulate? (3 marks)

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

D- Write the term or the identification of term in the blank cell of the following table? (5 marks):

Term	Identification
1.	A structure designed to allow fish the opportunity to migrate upstream over a barrier to fish movement.
2. Hepatosomatic index	
3. Osmoconformers	
4.	The upper jaw fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Iteroparity	
6.	Addition of sperms to eggs then addition of water
7. Cladogram	
8.	Allometry in which allometric coefficient less than 3
9.	Migration from one freshwater habitat to another freshwater one
10. Fecundity-size equation	

E- Answer six of the following questions including the first three questions (15 marks):

1. **What are the anatomical requirements and feeding strategies for a fish to be called carnivores? Mention examples? (3 marks)**

35- What are Meristics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

36- What are Morphometrics?

a) Counts of morphological characteristics such as fin rays and dorsal spines

b) Linear measurements of morphological characteristics such as eye width

c) A combination of counts and measurements of morphological characterstics

d) A genetic method of phylogenetic reconstruction

37- What is a clade?

a) a clade is a monophyletic assemblage

b) a clade is a natural assemblage

c) a clade is a unit of taxa that defines a unit of classification

d) all of the above

38- How is a clade defined?

a) by shared characters called apomorphies

b) by shared derived characters called synapomorphies

c) by shared characters called homoplasies

d) by unshared characters called paraphylies

39- Most recently, it was found that the earliest jawed vertebrates were

a) Chondrichthyes
b) Placoderms
c) Acanthodians
d) Osteichthyes
e) none of the above

40- Chondrosteans share characters with Chondrichthyans such as:

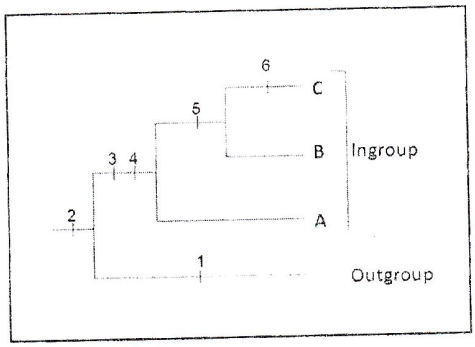
a) heterocercal tail and cartilaginous skeleton

b) spiral valve and swim bladder

c) Ampullae of Lorenzini and bony tongue

d) Encased embryos and spicules.

e) Toothless mouth but with pharyngeal teeth and horny pad.



26- In the above figure of the clade, character 6 is

a) Syanapomorphy
b) Symplesiomorphy
c) plesiomorphy
d) Autapomorphy

27- In the above figure of the clade, characters 3&4 are

a) Syanapomorphy
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy

28- In the above figure of the clade, character 5 is

a) Syanapomorphy for A, B& C
b) Symplesiomorphy
c) Syanapomorphy for B&C
d) Autapomorphy for C

29- Overfished stocks have:

a) Fast growth and good condition
b) Small average size of fish caught
c) Both a&b
d) Nothing of the above

30- *Gambusia affinis* has:

a) Dorsal fin as modified sucker
b) Pectoral fins modified as serrate
c) Anal fin as gonopodium
d) Pelvic fins modified as claspers

31- Flying fishes have modified fins that help them glide. These are:

a) pelvic fins
b) caudal fin
c) pectoral fin
d) all of the above

32- Swimbladders are filled

a) passively with oxygen
b) passively with nitrogen
c) actively with oxygen
d) actively with nitrogen

33- Gonopodium and claspers are structures adapted for

a) Placental development
b) Internal fertilization
c) External fertilization
d) Offspring feeding

34- Fish drinks water, urinates little and expels extra salts via the chloride cells. This scenario describes the osmoregulation strategy of a ----------

a) Shark
b) Freshwater bony fish
c) Marine bony fish

b) Faster swimming and larger gape size
c) Better sensory range
d) All the above
e) Only a&c

15- Maturity stage 2 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

16- The length-weight relationship is isometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) All the above
e) Nothing of the above

17- Length-weight can be expressed in the following formula:
a) $W = a * L^b$
b) $\log_{10} W = \log_{10} a + b * \log_{10} L$
c) Both of a& b
d) Nothing of the above

18- Stenophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

19- Energy used to maintain fish healthy is affected by:
a) Temperature
b) Dissolved oxygen
c) Toxins
d) All the above
e) Both of a&c

20- Monophagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

21- Teeth in piscivorous fishes are
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

22- Teeth in molluscivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

23- Teeth in plankton feeder fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

24- Teeth in herbivorous fishes are:
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.
e) Toothless mouth but with pharyngeal teeth and horny pad.

25- **Teeth in scavenger fishes are:**
a) Strong and a cutely pointed.
b) Single plate
c) Nibbling mouth with incisiform teeth.
d) Small teeth feeble.

b) decreases production of somatomedin
c) both of a &b
d) nothing of the above

2- **Anabolic steroids stimulate growth including:**
a) testosterone and estrogen
b) progesterone
c) corticosteroids
d) both of a& c

3- Wintering migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

4- Gametic migration includes:
a) Cata- and ana-dromous migrtions
b) Potamo- and oceano-dromous migrations
c) All the above
d) Nothing of the above

5- Protection mass movements of fishes includes:
a) Spawning and wintering migrations
b) Feeding migration
c) All the above
d) Nothing of the above

6- Maturity stage 1 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

7- Maturity stage 3 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

8- The food supply is a determining factor of:
a) Distribution and abundance
b) Condition and rate of growth
c) Migration and fertility
d) All the above
e) Nothing of the above

9- **The length-weight relationship is** negative allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

10- The length-weight relationship is positive allometric when the allometric coefficient is:
a) Less than 3
b) Larger than 3
c) Equal to 3
d) Nothing of the above

11- Europhagous plankton feeders have:
a) Mixed diet.
b) A limited sort of food.
c) One sort of food.
d) Nothing of the above

12- Maturity stage 4 is concerned with
a) Oocyte development
b) Vitellogenesis
c) Oocyte maturation
d) Spawning

13- Oocyte maturation in fishes includes:
a) Germinal vesicle (nucleus) migration
b) Resumption of meiosis (cell division)
c) Water uptake
d) All the above

14- Advantages of indeterminate growth in fishes includes:

a) Greater efficiency and more food options

Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Level: ----------

Final Exam in Fish Biology
Course No. 280
Second Semester-
2017/2018
Time: 2 hours

Answer the following questions (50 marks):

A- Fill in the blank spaces (5 marks):

1. The internal mechanism that regulates the process of reproduction is known as ----------.
2. Gonadotropin-releasing hormones are secreted by ---------- of the brain.
3. Fishes spawn once during lifetime are known as ----------.
4. The osmo-regulation in diadromous fishes is controlled by hormones such as ----------.
5. The very important structural innovations in Gnathostomata are ---------- and ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. Cyclostomata have one---------- with no genital ---------- and release gametes into body cavity.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, *ß*-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

B- Label the correct statement with True (T) and the incorrect one with False (F) (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. In positive allometric growth, the shape of fish does not change over time (------)
3. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
4. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)
5. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)
6. Anguillidae and Salmonidae spawn more than once during their life. (------)
7. Hagfishes could not perform as *osmoconformers*. (------)
8. NaCl concentration in body fluids of cartilaginous fishes = 80% of sea water (------)
9. *α*-type Chloride Cells pump Na^+ & Cl^- **OUT** of body fluids at gill epithelium of lamprey in saltwater. (------)
10. Freshwater(FW) Chondrichthyes perform more like FW Osteichthyes in osmoregulation. (------)

C- Choice the correct answer of each list in the following (20 marks):

1- Pituitary growth hormone in fishes leads to:

a) increases appetite and increases food conversion efficiency

5- The temperature affects (the physiology of animals- morphology- both).
6- The maximum rate at which a population can increase under ideal conditions is known as (biotic potintial- biotic potential- biotic potntial.
7-A few numbers of young is characteristic of (short lived animals – long lived animals – both).
8- The organisms that eat other organisms are known as (decomposers- producers- consumers).
9- The negative impact of man includes (overhunting- Species preservation- biological control-all).
10- The ecosystem includes (the biotic factors- the abiotic factors- both)

C- Answer the following: (10 marks):

1- Apply your knowledge on how we can conserve life on the earth.
2-Analyze the causes of a stable ecosystem.
3- On the light of your study: write three recommendations (توصيات) to prevent thermal pollution.

Good Luck

2- Write the scientific term of the following: (10 marks)

1- The highest population that can be maintained for an indefinite period of time by a particular environment.

2- Animals which depend on internal heat production.

3- A relationship in which one organism benefits and the other is harmed.

4- All the members of the community plus the physical environment in which they live in.

5- A biome with heavy rainfall and constant warmth.

6- A biome with sparse rainfall and extreme daily temperature fluctuations.

7- The struggle between different species for the same limited resources.

8- The role the species plays.

9- A stage of succession in which the populations of plants and animals exist in balance with each other and the environment.

10- A gas needed by all living things because it is part of the structure of amino acids.

3- Give one reason for each of the following: (10 marks)

1- Thermal Pollution.
2- Destruction of the ecosystem.
3- Dying of animals when temperature rises.
4-Considering Camels as highly adapted toward water loss.
5-Flight insects have a hard cover.
6-About 30% of solar radiation reflects again into sphere.
7- Temperature has a bifold effect on organisms.
8- Life can exist without sun in the deep water.
9-Most micro-arthropods do vertical migration.
10-Dcomposers are essential for any ecosystem.

4-Choose the correct answer from the following (5 marks):

1-The visible light includes (Ultra violet light-Infra red-the well known 7 colors).
2-The dominant species is that (possesses the highest biomass- occupies the most space - makes the largest contribution to energy flow - all)
3-Light affects (the behavior of animals- morphology-both).
4-Eutherms are (widely distributed-restricted in their distribution-both).

اقلب الصفحة من فضلك

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225 Z

Year: 2018 **Time: 2 hours**

Answer the following questions:

1- Write the suitable number from Column A in B: (15 marks)

1-The community	A relationship in which both organisms benefit from each other……..( ).
2-The ecosystem	Are the plants …….. …… ( ).
3- The limiting factor	Is killing and eating an individual of the same species……( ).
4- Range of tolerance	Are those which become active during day time…… ( ).
5- Homeostasis	Are those which become active during night…….. ( )
6-Monogamy	Are found on the top of food pyramid ……..…( ).
7-Polyandry	The number of births in a given time period…….. ( ).
8-Birth rate	Depend on internal heat production……..…… ( ).
9- Homeotherms	The formation of a pair bond between one male and one female..... ( ).
10- Mutualism	The individual female gains two or more males ……..( ).
11-Producers	The range of the environmental conditions within which the organism can tolerate……..…… ( ).
12-Cannibalism	The maintenance of conditions within the range that the organism can tolerate. ……..…… ( ).
13-Diurnal animals	The factor which determines the types of organisms which may exist in that environment…….. ( )
14-Nocturnal animals	Is the structural and functional unit studied in Ecology……. ( )
15- Carnivorous animals	An assemblage of populations in a given area…… ( )

اقلب الصفحة من فضلك

Q2. Answer six only of the following: (24 marks)

1- Compare only by drawing with labeling nervous system in both *Penaeus* & *Anodonta.*

2- Differentiate among various groups of Bivalvia.

3- Illustrate structure & function of mantle within Mollusca.

4- Classify Class Maxillopoda and name four genera from different orders.

5- Only draw with labeling the blood circulation in both *Buthus* & *Sepia.*

6- Distinguish digestion in *Astropectin* & *Chiton.*

7- List the characteristics of Echinodermata.

Q3: Give the reason (s): (12 marks)

1- *Limulus* is a chelicerate.

2- *Octopus* spreads a cloud of ink suddenly.

3- Echinoderms are deuterostomes.

4- Coiling doesn't affect the symmetry in gastropods.

5- "Tun" state in Tardigrada is unique phenomenon.

6- Opisthobranchs have posterior gills.

7- *Sepia* & *Octopus* are fast swimmers.

8- Thecosomes producing mucous nets above it.

9- *Holothuria* belongs to Echinodermata.

10- Isopoda can incubate embryos.

11- Diplopods protect themselves from predation.

12- *Conus* can overcome & engulf large & strong preys.

---------- End ----------

بالتوفيق و السداد هناء عاطف جودة

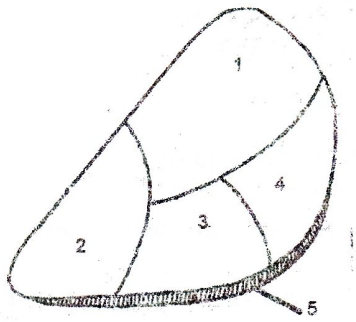
3- Mention the function for TEN only from the following structures: (10 degree)

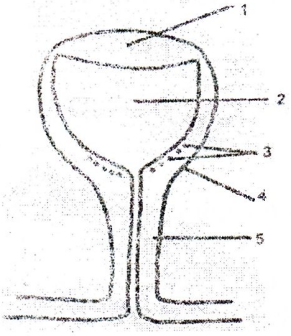
1. Atriopore
2. Wheel organ
3. Velum
4. Kollicker's pit
5. Oral fimbriae or papillae
6. Spiral valve or typhlosole
7. Rectal gland or caecal
8. Hindbrain in bony fish
9. membranous labyrinth
10. Neruromast or lateral line system
11. Ampullae of Lorenzini
12. Air bladder
13. Scales in fishes
14. Masseter muscles in frog
15. Tongue in frog

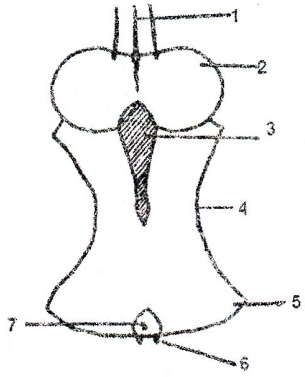
4- Answer Five only of following themes including numbers 2 and 5 mandatory: (10 degree)

1. By drawing only shows the anatomical features that characterize the Chordata.
2. **Draw well labeled diagram of extraembryonic membranes.**
3. State the different types of caudal fins or tails in fishes.
4. Diagrammatically show the structure of lateral compound eye of vertebrate.
5. **Draw the pentadactyl limb structure in the vertebrates.**
6. Compare between mature gametes in branchiostomta.
7. Compare between lower vertebrates and higher vertebrates.
8. Discuss the structure of solenocytes of Amphioxus.

5- Define and label each of the following structures: (10 degree)







1-..... 2-..... 3-.....

Best wishes.....

Assiut University,
Faculty of Science,
Zoology Department,
Zoology & Zoology and
Chemistry Section,

Final Exam
May 2017/2018

Course: Vertebrates (I)
Time: 2 hours
Level: Second
Course Code: Z232

Answer the following questions with labeled drawing if they needed

(NOTE: Exam in Two pages)

I- Choose the best correct answer (10 degree)

1- Scales in the sharks are:
   a- Cycloid
   b- Ctenoid
   c- Placoid
   d- Ganoid

2- One of the following is converted into thyroid gland of vertebrates:
   a- Endostyle
   b- Pharyngeal gill slits
   c- Epipharyngeal groove
   d- Peripharyngeal bands

3- The thermoreceptor in branchiostoma is:
   a- Eye spots
   b- Cephalic pigments
   c- Infnudibular organ
   d- Kollickers pit

4- Excretion in vertebrates takes place by:
   a- Unpaired kidney
   b- Unpaired pronephron
   c- Paired mesonephric kidneys
   d- Paired mesonephric and metanephric kidneys

5- The pineal organ in lampreys is:
   a- Present immediately behind the nostril
   b- Present immediately behind the eye
   c- Present between the eye and the nostril
   d- Absent

6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:
   a- Gill lamella
   b- Gill arches
   c- External gill slits
   d- Internal gill slits

7- In petromyzon optic lobes are present in:
   a- Forebrain
   b- Midbrain
   c- Hindbrain
   d- Medulla oblongata

8- Intermediates between cephalochordates and vertebrates:
   a- Ostracoderms b-Placoderms c-Branchiostoma d- Ammocoete larva

9- The third eyelid in frog is called:
   a- Pineal eye b-Upper eyelid c-Over eyelid d- Nictitating membrane

10- The teeth in frog are meant for:
   a- Chewing b- Preventing c-Tearing d-Cutting

II- Put (√) in front of the following sentences and correct the wrong one: (10 degree)

1. Fish is an anamniote animal
2. The term vertebrata is synonymous to chordate
3. In vertebrates, the pharyngeal gill slits are not more than 9 pairs
4. The first fossil records of vertebrates were found in the rocks of Ordovician
5. Exoskeleton in lampreys is cartilaginous
6. Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes
7. The cartilage surrounding the buccal funnal in Petromyzon is annular cartilage
8. Anticoagulant in petromyzon is secreted by mucous glands
9. The eggs of lampreys are Teloleithal
10. In frog stomach is U shaped

Assiut University
Faculty of Science
Department of Zoology

Fish Farming (Z295)
4th Level students
Time: Two hours
Final Exam2017/2018

Answer the following questions:-

1- Complete:- (10 Marks)

-The term aquaculture refers to the cultivation of .....

- Aquaclture is estimated to contribute..... tons in fish production in 1983.

- In static freshwater ponds, the water supply may be from....., ... and .....

- In brackish water ponds there is a system of ..... to control the ..... and .....

- In culture in recirculatory system, water is..... continuously and recirculted, often after..... to the fish pond.

- The soil in the area selected for fish farm should be.....

- Any existing..... line must be excluded from the area envisaged for fish farm.

- ..... are essential for operating major fish farms efficiently.

- The site of fish farm should be in the..... of transportation .....

- The fish farm should be sited primarily in areas unsuited to other ..... uses.

- Transport of feed from the ..... to the ponds and of the ..... to the holding ponds should involve short hauling distances.

- Sites should be selected for fish farms only where water of the required ..... and ..... is available.

2- Write on:- (10 Marks)

(a) Different kinds of aquaculture.

(b) Causes of mortality in fish transportation.

3-Mention only 5 of: (10 Marks)

(a) Objectives of aquaculture.

(b) Economic and social factors affecting selection of sites for aquaculture.

4-What are: (10 Marks)

(a)The required geotechnical data for fish farm.

(b)The important climatological factors needed for the site of fish farm.

5- Mention: (10 Marks)

(a)The desirable characteristics of aquaculture organisms.

(b)The criteria for selection of species for culture.

Good Luck