Egypt, Assiut University
Faculty of Science,
Zoology Dept.

Final Exam in Fish Biology
Course No. 280
1st Semester-2019/2020
Time: 2 hours
Pages 1-13

Answer the following questions (50 marks):

A- Discuss different maturity stages in fishes and their environmental and hormonal control with diagrams? What are the definition of fecundity and the associated implications of its estimation (5 marks).

B- How can fish remove 80 - 90% of O_2 available from water? What are the difference between branchial and ram ventilations? (2.5 marks)

C- Fill in the blank spaces (2.5 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 ---------- ----------.
6. Fishes breed at regular intervals during a season within a year are known as ---------- fishes.
7. ---------- is a decrease in affinity of Hb for O_2 due to decreasing pH or increasing pCO_2.
8. In bull sharks, internal osmotic pressure is reduced from ------- mOsmol/l to-------- mOsmol/l.
9. In lamprey, β-type ----------cells in gill epithelium function to import ------- & Cl^-
10. Fishes of family ---------- spawn once after long, energy consuming migration.

D- Label the correct statement with True (T) and the incorrect one with False (F) with correction of the false (5 marks):

1. Growth rate of immature fish are much faster than those of mature fish. (------)
2. When allometric coefficient is less than 3, the shape of fish does not change over time. (------)
1. Different Hemoglobin types allow migratory fish to deal with changing conditions. (------)
2. The elasmobranchs are incapable of osmoregulation. (------)
3. Amazon River fish switch from invertebrates to detritus in the rainy season. (------)
4. Stenohaline tolerate a narrow range of salinities in external environment - either marine or freshwater ranges (------)
5. The clitherum and opercular bones are suitable for age determination. (------)
6. Freshwater bony fish are hyperosmotic facing challenge to homeostasis: constant loss of water from body to environment by osmosis (------)
7. Herbivores are represented by > 5% of all bony fishes. (------)
8. In Euryhaline bony fish, hormone-mediated changes are associated with metamorphosis - convert from freshwater adaptations to saltwater or vice versa, depending on direction of migration (------)
9. Scavengers are represented by 5-10% of all fish species. (------)
10. In freshwater Chondrichthyes, rectal gland is reduced, but present and urine flow is low. (------)
11. In the most highly evolved Elasmobranches, the anterior end of the premaxilla develops what's called an ascending process. (------)
12. Hagfishes and lampreys have been assigned to separate Craniate classes, which means that the name "Agnatha" is a paraphyletic assemblage of jawless fishes. (------)
13. The primitive gape and suck feeding mechanism as in *Elops* provide the raw material for the evolution of protrusible jaws. (------)

14. Chondrichthyes have internal fertilization, but sharks may be oviparous, ovoviviparous, or viviparous. (------)

15. Instead of a toothed mouth, the jaws of chimaeras bear large flat plates in their jaws, the upper one of which is completely fused to the cranium. (------)

16. *Micropterus salmoides* consumes food at 10C three times than that in 20C. (------)

17. When the allometric coefficient is equal 3, large specimens with fusiform body are in better condition than small ones. (------)

18. Fishes with high RGL = species consuming detritus and algae with high proportion of indigestible matter. (------)

E- Choice the correct answer of each list in the following (10 marks):

1- **Pituitary growth hormone in fishes leads to:**
a) increases appetite and increases food conversion efficiency
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
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-scale relationship 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- **Mechanisms to move CO_2 outside cell include:**

a) Simple dissociation in plasma.
b) Binding to proteins.
c) Dissociation into carbonic acid by pH change.
d) All 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.
e) Toothless mouth but with pharyngeal teeth and horny pad.

26- **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

27- **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

28- **Schrekstoff is**
a) The fear hormone
b) A high latitude freshwater fish
c) Used in sexual selection
d) An adaptation to cold water

29- **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

d) Lamprey

30- **In cartilaginous fishes, body fluids are isosmotic with environment due to:**

a) Mineral concentration = 500 mOsml/l

b) Urea 440 mOsmol/l

c) Trimethyl Amine Oxide = 70 mOsmol/l

d) All the above

F- 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 give fish the opportunity to migrate upstream over a barrier to fish movement.
2. Gonadosomatic index	
3. Bioenergetic law	
4.	The upper jaw not fused to the braincase, and the hyomandibular arch is involved in jaw suspension
5. Von Bertalanffy Growth Function	
6. Lee's phenomenon	
7. Relative weight condition factor index	
8.	Decrease in capacity of Hb for O_2 due to decreasing pH or increasing pCO_2
9. Osmoconformers	
10. Dry fertilization	

G- Answer the following questions (20 marks):

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

2. **Discuss the types of migration in relation to osmoregulation mechanisms in Anguilla Anguilla, Salmon and lamprey? What are the types of spawning migration? (4 marks)**

3. **Enumerate the methods of growth rate measurements with criteria of back-calculations and associated equations used? (2 marks)**

4. **Mention different factors influencing mass movements of fishes and the role of hormones? (3 marks)**

5. **Explain four buoyancy strategies in fishes with emphasis on types of swim bladder and the effect of depth on its volume? (3 marks)**

6. **Write short note on the alimentary tract adaptations in fishes according to their food and feeding habits? (3 marks).**

7. **How do sharks osmoregulate? (2 marks)**

	امتحـــان الفصل الدراســـــي الأول لطلاب كلية العلوم للعـــام الجامعـــي 2019-2020	

القسم الذي يقدم المقرر: الوراثة — الفرقة: المستوى الثاني (ساعات معتمدة)

اسم المادة: (215 ز) أساسيات الوراثة — الزمن: ساعتان

لجنة الممتحنين: أ.د/ بهاء الدين السيد عبد الفتاح — د/ محمود أبو السعود الراوي

تعليمات الامتحان

1- يتكون الامتحان من أربعة أسئلة — 2- يتكون الامتحان من صفحتين

3- فكر جيدا قبل ان تجيب عن الاسئلة، ولا تجعل قلمك يسبق فكرك — 4- الدرجة الكلية للامتحان (50 درجة)

أجب عن جميع الأسئلة الآتية

السؤال الاول:- :- (10 درجات)

إناث حشرة الدروسوفيلا خليطة في ثلاث مواقع هى لون الجسم (e^+/e) وطول الجناح (vg^+/vg) وشكل العين (br^+/br) لقحت اختبارياً مع ذكور الدروسوفيلا وكان عدد النسل الكلي الناتج 1000 حشرة وكانت المسافة بين الموقع e^+ والموقع vg^+ تساوي 20 وحدة على الخريطة والمسافة بين الموقع vg^+ والموقع br^+ تساوي 10 وحدة على الخريطة وكان معامل التداخل يساوي 0.5

المطلوب

$$\frac{e^+ \quad vg^+ \quad br^+}{e \quad vg \quad br} \times \frac{e \quad vg \quad br}{e \quad vg \quad br}$$

احسب عدد الأفراد لكل من الطرز الوراثية الناتجة من هذا التلقيح ثم ارسم الخريطة الكروموسومية.

السؤال الثاني: (15 درجة)

ضع علامة (√) امام العبارة الصحيحة وعلامة (X) امام العبارة الخاطئة (قم بعمل جدول في كراسة الإجابة به رقم الجملة فقط والعلامه المناسبة)

1	تتحور النسبة المندلية من 9: 3: 3: 1 في حالة التفوق السائد والمتنحي إلي النسبة 12:3:1	( )
2	الصفات التي تنتقل من الذكور لأبنائها الذكور مباشرة تعرف باسم الوراثة التصالبية	( )
3	نظام تحديد الجنس في دودة البونيليا نظام جيني	( )
4	فرد خليط في ثلاث أزواج من العوامل الوراثية بينهم ارتباط تام يعطى ثمانية أنواع من الجاميطات	( )
5	التهجين بين نباتات♂ S_1S_3 مع نباتات ♀ S_2S_4 يعطي نسل بنسبة 50% في حالة سلسلة اليلات عدم التوافق الذاتي	( )
6	صفة الصلع في الانسان من الصفات المتأثرة بالجنس التي تعني ظهورها في جنس دون الجنس الآخر	( )
7	النسبة 9:3:4 تمثل التفوق المتنحي المزدوج بينما النسبة 12:3:1 تمثل التفوق السائد	( )
8	تكون نسبة الاتحادات الجينية الجديدة في حالة الارتباط هي 100%	( )
9	تحديد الجنس في نبات الأسبرجس يعتمد على النظام الجيني	( )
10	عندما تكون نسبة X/A= 1/3 يكون نوع الجنس في الدروسوفيلا (بين جنسي)	( )
11	التلقيح العادي والتلقيح العكسي يعطي نتائج غير متماثلة في حالة الصفات المرتبطة بالجنس.	( )
12	النسبة 9:7 تمثل حالة الجينات المكملة والتي تتطلب أليل سائد من كل موقع وراثي لظهور الصفة	( )
13	وراثة مجاميع الدم يمكن أن تكون مثالاً لكل من الأليلات المتعدده و السيادة الجزئية والسيادة الغائبة والسيادة التامة	( )
14	التهجين بين نباتات♂ S_2S_1 مع نباتات ♀ S_3S_4 يعطي نسل بنسبة 100% في حالة سلسلة اليلات عدم التوافق الذاتي	( )
15	في حالة الجينات المميتة تزاوج فئران صفراء مع أخرى رمادية يعطي نسل بنسبة 1:1	( )

السؤال الثالث:- (10 درجات)

قم بنقل مصطلحات العمود (أ) في كراسة الاجابة ثم ضع امامه رقم العبارة المناسبة من العمود (ب).

(أ)	(ب)
β - galactosidase	1- - يعمل على فك سلاسل الـ DNA عن بعضها في الخيط المزدوج
SSB proteins	2- يزيل الحلزنة الفائقة الموجبة
Topoisomerase I	3- تضاعف DNA الميتوكوندريا
DNA polymerase II	4- تعمل على تثبيت سلاسل الـ DNA المفردة أثناء التضاعف
Ter-binding protein	5- يحلل سكر اللاكتوز إلي جلوكوز وجلاكتوز
RNA polymerase III	6 وحدة بناء الـ DNA
γ-DNA polymerase	7- من متطلبات تفاعل البلمرة المتسلسل
UGA	8- يقوم بتصحيح الاخطاء اثناء عملية التضاعف
Taq DNA Polymerase	9- يقوم بنسخ الجينات المشفرة لـ 5S-rRNA والـ tRNA
Nucleotide	10- من شفرات الايقاف
	11- ترتبط بتتابعات النهاية وتمنع تقدم شوكة التضاعفت
	12- شفرة البدء

السؤال الرابع:- (15 درجة)

أ- قم بنقل رقم العبارة في كراسة الاجابة ثم ضع علامة(√) امام العبارات الصحيحة وعلامة (×) أمام العبارات الخاطئة (5 درجات)

1- ( ) يمكن أن يكون للجين الواحد أكثر من وظيفة و ذلك عن طريق القص المتنوع لجزئ الـ pre-mRNA

2- ( ) يتضاعف الـDNA بالطريقة شبه المحافظة.

3- ( ) التحكم في ابيرون التربتوفان تحكم سالب.

4- ( ) تتكون منطقة بدء التضاعف من ثلاث طرز مختلفة من تتابعات الـ DNA

5- ( ) لا تحتوي جينات الكائنات بدائية النواة على انترونات بينما تحتوي جينات حقيقية النواة على الإنترونات والإكسونات.

ب- أجب عن جميع الاسئلة التالية:- (10 درجات)

1- وضح باختصار مراحل عملية تفاعل البلمرة المتسلسل (PCR). (3 درجات)

2- وضح بالرسم فقط الفرق بين تركيب المرقي Promoter في الكائنات بدائية النواة والكائنات حقيقية النواة. (4 درجات)

3- وضح مع الرسم القص المتنوع لجزئ الـ mRNA في جين الكالسيتونين. (3 درجات)

إنتهت الأسئلة مع أطيب التمنيات بالتوفيق،،

لجنة الممتحنين:- أ.د/ بهاء الدين السيد عبد الفتاح

د/ محمود أبو السعود الراوي

University: Asyut	Invertebrate II	Total degree 50
Faculty: Science	Code: 222 Z	Final exam.
Department: Zoology	Jan. 2020	Time: 2 hrs.

Answer the following questions: (Note: The questions are in 2 pages)

Q1. Put (√) or (X) and correct the false if present: (13 marks)

1- *Squilla* has jet propulsion in swimming. ( )

2- Sea spiders have long legs, small body & large proboscis. ( )

3- *Scolopendra*; is deuterostomate, lacks arms and eviscerates to avoid predation. ( )

4- The circulatory system is of the same design in Arthropoda as the Annelida. ( )

5- *Ophiocoma* is a parasitic cirripede. ( )

6- Remipedes belong to Crustacea. ( )

7- Crystalline style is found in the stomach of *Limulus*. ( )

8- *Anodonta* is glowing fluorescent under UV light. ( )

9- In detorsion the visceral hump turns either sinistral or dextral. ( )

10- *Cyclops* has 3 branched antennae & 9 pairs of legs. ( )

11- *Balanus* is a jawless chelicerate which chews when walks. ( )

12- Ommatidium is an exceptional state during which tardigrates shut off their metabolism. ( )

13-Copula is unique system of hydraulic canals performs several functions. ( )

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

1- Discuss the importance of the exoskeleton in Arthropoda.

2- List the main characteristics of Chelicerata.

3- Illustrate the functions of spiders' silk.

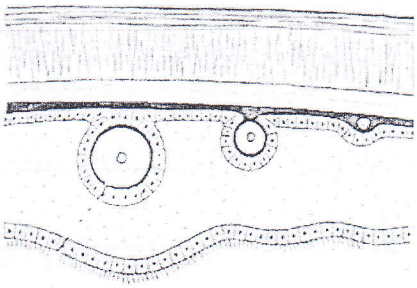
Look behind please!

4- Classify Phylum Mollusca and give an example for each group.

5- Demonstrate with drawings blood circulation in both *Eremina* & *Lycosa*.

6- Draw only with labeling the water vascular system in *Astropectin*.

7- Examine the opposite figure and answer the following:



I- Name this phenomenon. II- The reason

III- Name the phylum. IV- The responsible tissue

Q3. Choose between brackets: (13 marks)

1- (*Sacculina-Pagurus-Cyclops*) is a parasitic cirripede.

2- Poisonous appendage in *Buthus* is (pedipalp-chelicera-captacula-sting).

3- Chitons belong to (Scaphopoda-Gastropoda-Polyplacophora).

4- (Crystalline style-Siphuncle-Copula) is cord of tissue connected to visceral mass.

5- (Echinoderms-Molluscs-Annelida) possess mantle performs several functions.

6- (*Strombus - Conus –Trocus-* All) belong/s to Prosobranchia.

7- (Detorsion – Torsion- coiling) occurs in the early developmental stages.

8- Echinoderms like coelenterates in the (digestion- symmetry-locomotion-all).

9- The jaw apparatus in Echinoidea is (crystalline style –Aristotle's lantern-radula).

10- (*Cyclops- Ophiocoma*-Echinometra) has endoskeleton, flexible arms and no oral grooves.

11- (Book lungs-Trachaea-Gills) are chambers with leaf-like plates for exchanging gases.

12- Myriapods include (millipedes-centipedes-pauropods-all).

13- (Asterozoa-Crinozoa-Echinozoa) are animals with upward oral surface and flexible arms.

هناء عاطف جودة ALL THE BEST

Faculty of Science
Assiut University
Final exam of invertebratesI (220Z) Jan-2020
Time :Two hours

Invertebrates I (220z)

Answer the following questions:-

Q1 Choose the correct answer (20 marks one for each point)

1-Animals of division Radiata are
A-Triploblastic b-diploblastic c-adioblastic d-quadroblastic

2. Which of the following is not a characteristic common to all animals?
a- they are all vertebrates b) multicellular c) eukaryotic d) heterotroph e) lack cell walls

3. How does a planarian consume food?
a-filter feeding b-diffusion across the cell membrane c-capturing with tentacles
d-siphoning food through a pharynx

4-. Which type of symmetry does a sponge have?
a)radial b) bilateral c) asymmetry d) geometric e) amorphous

5-Which of the following would not be considered an example of ASEXUAL reproduction in the sponge?
a) budding b) regeneration c) formation of a zygote d) gemmule production

6- Which Cnidarian body type does the adult jellyfish possess?
a-polyp b) medusa c) gemmule d) nematocyst e) auto-body

7-What type of feeding habit does the hydra represent?
a-scavenger b) detritus feeder c) herbivore d) carnivore e) omnivore

8-While most of the Platyhelminthes are free living or endoparasites, which one of the following taxa has an ectoparasitic life cycle?
A-Cestoda B- Trematoda C- Turbellaria D- Monogenea

9-The clitellum of an earthworm
a. contains the heart. b. is associated with reproduction.
c. acts as a primitive respiratory system. d. is necessary for movement

10-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

11- Which organelle functions to remove excess water?
a) Micronucleus b) contractile vacuole c) pellicle d) gullet

12- The reproductive units of the cestodes are called
A)siphonoglyphs. B) proglottids. C)opisthaptors. D) scolices

13- Which of the following is autotrophic?
a) Paramecium b) Foraminifera c) Ameba d) Euglena

14-In a triploblastic organism, the inner layer of embryonic tissue is the
a.) ectoderm b.) endoderm c.) mesoderm d.)placoderm

15- The Porifera, Cnidaria and Platyhelminthes all:
a) lack a coelom. b) lack an anus. c) lack a mesoderm layer. d) All of the above.
e) (a) and (b) but not (c).

16- Which of the following is not a characteristic shared by most members of the kingdom Animalia?

a) Spending some or all their lives able to move. b) Being multicellular. c) Being heterotrophic. d) Being dominantly haploid. e) Having either radial or bilateral symmetry

17- The type of tissue that is found around the intestine in the annelids that can synthesize glycogen and break free to distribute nutrients in the coelom is called

a- chloragogen tissue. b- archeoblastic tissue. c- pancreatic tissue. d- nephridial tissue.

18- Roundworms have a fluid-filled cavity called a

a. coelom. c. digestive system. b. pseudocoelom. d. None of the above

19-All of the following groups of invertebrates are coelomates *except*

a. Annelids. b. Echinoderms c. Mollusks. d. Nematodes

20- Cells of Hydra possessing flagella and pseudopodia are:

a)Nematocysts b) Secretory cells c) Epitheliomuscular cells d) Nutritivemuscular cells

-Q2- Compelet the following statements (10 marks) one mark for each point

1 –Parazoon animals belong two phyla are .....and...

2- Phylum Mesozoa is classified into two classes ..... and.....

3- The infective stage of *Plasmodium* sp is ..... while the infective stage of *Schistosoma* sp is.....

4- Scientific name of hookworm ..... while the scientific name of pork worm is.....

5 -the cillatelta clade contains two classes are ..... and.....

6- Phylum porifera is classified into three classes ....., ... and

7- The subphylum sarcodina move by ..... while the phylum Ciliophora move by .....

8-- Excretion in the phlyum Nematoda by..... while excretion in the phlyum Annileda.....

9-Phylum Cinderea is classified into four classes ....., ..., ... and

10-- The cavity of cnidarians is called..... while in porifera is called.....

Q3- Illustrate with labelling drawing four only of the following: 8 marks 2 for each point

1- Body plane of sycon type of porifera.
2- Body plane of Monagena animal.
3- structue of Ctenophora.
4- Body plane of Nematoa.
5- Stucture of nephridium unite.

Q4 Answer the four only of the following:-(12mark) 3 mark for each point

1-Compare between Protostomes and Deuterostomes animals.
2-Write shote note on nervous system of Phylum Nematoda
3-Compare between classes of Phylum Annileda
4)Explain life cycle of *Ascaris lumbricoides*
5) What are the common features of protozoa phyla and enumarte these phyla

---------- **Good luck**

لجنة الممتحنين

أ.د/ أزهار حسين محمد

4- The most common symptom of malnutrition is…….

a- weight loss and lack of energy
c- breathlessness and anemia
b- changes of skin, hair and nails
d- all of them

5-Excess dietary amino acids are converted into glucose by process known as….

a- gluconeogenesis
b- lipogenesis
b- glucogenesis
d- glucogenlysis

6-Amount of O_2 bound or released by Hb depends on……..

a- PO_2
b- temperature
c-pH
d-All of them

7- The actual intake of water per person per day is affected by factors such as….

a- diet
b- temperature
b- blood pressure and general health
d-All of them

8- The myelin sheath around the axon of nerve fiber is consists of……..

a-fat b- carbohydrate c- protein d-all of them

9-Interneuron that connects sensory and motor neurons are found in ……

a- CNS b- PNS c-ANS d- all of them.

10-Malnutrition commonly affects ……

a- Children b- elderly c-pregnant women d-all of them

Q3- Illustrate by diagram the following: (15 marks)

1- Functions of insulin and control of its secretion.
2- Conduction system of the heart
3- Structure of reflex arch.

Q4- Write on THREE ONLY of the following: (15 marks)

1- The role of liver in metabolism
2- Circulatory system disorders
3- Normal and abnormal components of urine
4- In table compare between hormonal and nervous co-ordination.

Good luck

Dr. Hossam El-Din M Omar
Prof. of Physiology, Zoology Department, Faculty of Acience, Assiut University

Final Exam: Physiology 1 (217Z) **Time: Two Hours**
Credit Hour System 2019/2020 **First Semester**
Total marks: 50

Answer the following questions:

Q1- Sign true (√) or false (×): (10 marks)

1- FSH stimulates interstitial cells in the testes to secrete testosterone ( ).
2- Estrogen and progesterone are steroids hormones ( ).
3- Autocrine hormones are released and act on the cell that secreted them ( ).
4- ADH conserves body water by reducing the loss of water in urine ( ).
5- Glycogen is common example of disaccharides ( ).
6- Triglyceride is usually recognized by their tetracyclic skeleton ( ).
7-Surfactant is phospholipids secreted by type I alveolar cells ( ).
8-Automatic breathing is controlled by center in medulla oblongata not influenced by the chemoreceptors that monitor blood PCO_2, PO_2, & pH ( ).
9-Strong inhibition of the renal sympathetic nerves can constrict the renal arterioles and decrease renal blood flow and glomerular filtration ( ).
10- Synaptic cleft is a gap between two neurons, bridged by neurotransmitters ( ).

Q2- Choose the single correct answer: (10 marks)

1. Insulin....

a- stimulates the storage of fat in adipose tissues.
b- decreases both amino acid and glucose uptake by the cells.
c- stimulates hepatic gluconeogenesis.
d- has a protein catabolic effect.

2. Normal development of the CNS in fetal life depends on normal production of...

a- calcitonin b- growth hormone
c- thyroid hormones d- aldosterone

3. The concentration of hormone as seen by target cells is determined by rate of...

a- production b- delivery
c- degradation and elimination d- All of them

See Next Page

Assiut University
Faculty of Science
Zoology Departmnt
Final Exam of first term 2019/1020

Second Level
First term
Time: two hours

Course title: Physiology1 (217Z)

Q1- Answer by √ or X for these sentences:- (15 Marks: ¾ mark each)

1- Deficiency of vit. A lead to Inflammation of conjunctiva (Bitot's spot , white area in the conjunctiva).. ... .( )

2- Gastrin hormone secreted from duodenum, stimulates gastric juice secretion. .... ( )

3- Some vitamins are synthesized by intestinal bacteria such as vitamin B and K , while exposure to ultraviolet rays of sun participates in the formation of vitamin D calciferol in subcutaneous fat. ..... ( )

4- Small intestine composed of three parts starting by duodenum followed by Jejunum and ileum and the third is the longest and foods absorption is carried out in both Jejunum and ileum. ..... ( )

5-Vitamin K is essential for synthesis and activation of blood clotting factors, and its deficiency leads to shortening clotting time. .....( )

6- Vitamin B2 deficiency leads to inflammation of angles of mouth, scaled nose and vascularization of cornea and Photophobia. ..... ( )

7- In some, pathological cases, the body increase the dependence on body fat to produce energy leading to increases the level of keto bodies forming edema. ... .( )

8- The renin enzyme has ability to digest and coagulate milk in stomach of children and small animals to give a time to complete digestion of milk protein (casein) by gastric pepsin enzyme . .....( )

9-Vitamin A participates in epithelial glycoprotein synthesis and this maintains the mucosa of urogenital tract, respiratory tract, gastrointestinal tract, the cornea and the skin. .....( )

10- Permanent teeth grow below the milk teeth gradually to be exchanged by them at 3 to5 years old, while wisdom teeth start to grow at 17 -25 years (sometimes delay to 25 years old) ..... ( )

11- The excess of cholesterol found in the bile transformed into cholate salts add to faeces. ..... ( )

12- The rate of enzyme reaction is increased with the increase of substrate concentration till a certain point at which any increase in the substrate concentration will cause no further increase in the rate of enzyme reaction. .... ( )

13-Deamination means that amino group is transferred from one amino acid to keto acid forming a new type of non-essential amino acids. ....( )

14-Function of Vitamin B1 is to increase the activity of acetylcholine at nerve endings by stimulating acetylcholine esterase enzyme. ... ( )

15- Copper deficiency decrease the immune power of the body and lowering of ceruloplasmin. ... .( )

16-The cortex of kidney contains all the renal corpuscles, proximal , distal convoluted tubules and parts of collecting tubules. .....( )

17- Liver cirrhosis can led to prevent conversion of direct bilirubin into indirect bilirubin and this will change faeces colour. ..... . ( )

18- liver cirrhosis can led to prevention of storage of intrinsic factor secreted from gastric mucosa leading to inhibition of vitamin B12 absorbance .... ( )

19- Carbon dioxide produced from the tissues: 90% enter red blood cells, 30% of them converted into a compound with hemoglobin, and the rest come out as bicarbonates to the blood, forming a buffer solution in blood. .... ( )

20- In spite of the Bile juice secreted ¾ Litre per day from the gall bladder which has no digestive enzymes, it participate in rising fat digestion 3 times. .... ( )

Q2- Answer 7 questions only: (35 marks: 5 marks each)

1- Write on the steps of urine formation with drawing nephron unit and its illustrations.

2-Explain the steps of Cardiac beat with drawing ?

3- Discuss the pancreatic enzymes and its role in digestion?

4- Discuss the biological function of nutritional lipids. (6 items)

5- Discuss the synthesis of hydrochloric acid in the stomach?

6- Mention the methods of molecules by which move across the plasma membrane?

7-Discuss the blood and lymph pathways of intestinal absorption?

8- Draw oxygen dissociation curve discussing the five comments?

With great success

Prof. Dr. Mohamed Bassam Al-Salahy Elbradei

Assiut University
Faculty of Science

Department of Zoology

The Second level
Cytology (210Z)

Time: Two hours

January, 2020

(1) Choose the correct answer : (16 Marks)

1-The diameter of microtubules is about:

a- 10nm b- 6 nm c- 25 nm

2- The phase of cell cycle which lasts for shorter duration:

a- G1 b- S c- M

3- The chromosome number of pigeon is:

a- 44 b-80 c-12

4-Awell organized nucleus with adistinct nuclear membrane is absent in:

a- Bacterial cells b-Eukaryotic cells c- Protozoan cells

5- Glial filaments are present in:

a-Macrophages b- Astrocytes c- Chondroblasts

6- Diploid somatic cells divide by:

a- Meiosis b- Mitosis only c- Both meiosis and mitosis

7- The centromere lies within:

a- Secondary constriction b- Nucleolar organizer
c- Primary constriction

8-DNA becomes duplicated during:

a- G1 phase b- S phase c- Prophase

9-The rough ER is specially well developed in cells actively engaged in:

a- Protein synthesis b- Nucleotide synthesis

c-Lipid synthesis d- Secretory functions

10-The process by which a vesicle is formed at the plasma membrane to bring substances into the cell is called:

a- Endocytosis b- exocytosis c- Plasmolysis d- Hemolysis

11-Lysosomes are present in all except:

a- Muscle cells b- acinar cells c- erythrocytes d-hepatocytes

12-Lysosomes are involved in

a- Extracellular digestion b- Intracellular digestion

c-Both (a) and (b) d- none of the above

13-Which organelle is involved in lipid metabolism?

a- Rough endoplasmic reticulum b- Smooth endoplasmic reticulum

c-Lysosome d- Golgi apparatus

14- Which of the followings most correctly identifies the sequence of organelles involved in the production and secretion of proteins?

a- Ribosomes, Golgi apparatus, secretory vesicles, rough endoplasmic reticulum, cell membrane.
b- Ribosomes, rough endoplasmic reticulum, Golgi apparatus, secretory vesicles, cell membrane.
c- Rough endoplasmic reticulum, ribosomes, secretory vesicles, Golgi apparatus, cell membrane.

15- Which organelle contains detoxifying enzymes?

a- Ribosomes b- Peroxisomes c- Microfilaments

16- The enzymes secreted by rough endoplasmic reticulum are concentrated and packaged by:

a-Mitochondria b-Golgi apparatus c- Ribosomes

(2) Mention whether each of the following statements is true (T) or false (F) and correct the false one: (14 Marks)

1- Number of chromatids present in metaphase is two.

2- Microtubules are formed of actin.

3- Sex chromatin represents one of the euchromatin.

4- The centromere contains two kinetochores.

5- Nuclear membrane is continuous structure.

6-In karyotype,phytohaemagglutinin is added to culture medium to arrest mitosis in metaphase.

7-Lipofuscin pigment is called age pigment.

8- Cell membrane contains hydrophilic tail and hydrophilic head.

9-Strong adhesion between cells need gap junctions.

10-Golgi apparatus is called suicide bags.

11-Cytochorme oxidases are found on cristae of mitochondria

12-Rough endoplamic reticulum plays a role in detoxification

13- Cells that produce large amount of steroid hormones are expected to have many ribosomes.

14- Secretry granules of Golgi apparatus usually bud from cis face.

(3)A Define the following: (10 marks)

1- Chromosomes 2- Karyotype 3- Cytoskeleton

4- Nuclear pore 5- The nucleus

B- Describe the structure and function of the nucleolus.

(4)Answer two questions only: illustrate your answerwith labelled drawings whenever possible (10 Marks; 5 marks each).

A- Give an account on the molecular structure of plasma membrane.

B- Describe the ultrastructure of mitochondria.

C- What are the function of lysosomes.

Best Wishes

Prof. Abdallah B.Mahmoud

Prof. Bothaina M. Khidr

Faculty of Science **Assiut University**

Dept. of Zoology

Exam of Animal Ecology Code No. 225Z

2019-2020

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	The degree to which individuals of the same species tolerate one another ( ).
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- Social behavior	An assemblage of populations in a given area…….. ( )

اقلب الصفحة من فضلك

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).
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)

اقلب الصفحة من فضلك

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