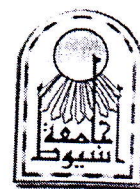




Assiut University-Faculty of Science
Second semester (2020 – 2021)
Department of Zoology



Date: 1/7/2021

Course title: Fish farming

Time: Two hours

Code: (Z 5)

Answer the following questions:-

Q1-Choose True or False (One mark each) Final

- 1-In industrially advanced countries, aquaculture is carried out by private sector. (True-False)
- 2- Aquaculture is estimated to contribute 12.21 million tons in production in 1983. (True-False)
- 3- In pond culture, the farm is essentially located on a tidal creek. (True-False)
- 4- Mariculture is aquaculture in the saltwater of the sea.(True-False)
- 5-Culture in rice fields had declined in recent years because of use of fish-toxic pesticides. (True-False)
- 6- In cage culture, no question of seepage and evaporation losses. (True-False)
- 7- In pond culture, no problem of pond excavation and dependence on soil characteristics. (True-False)
- 8- Cage culture is difficult to apply when water is rough. (True-False)
- 9-The water supply may be from a stream or canal or from an underground source or rainfall in brackish water ponds. (True-False)
- 10- Public acceptance is one of the restraints in wastewater treatment culture systems. (True-false)
- 11- Prevents loss of stock due to flooding is one of merits of cage culture. (True-False)

- 12- Culture of *Clarias gariepinus* and Tilapias in Africa is a good example for polyculture. (True-False)
- 13- The soil in the area selected for pond culture should be impervious. (True-False)
- 14- The site of fish farm should be in the vicinity of transportation routes. (True-False)
- 15- Skilled operators are not essential for operating major fish farm efficiency. (True-False)
- 16- Slaughterhouse refuse and fish byproducts are artificial fish feeds of vegetable origin. (True-False)
- 17- Shrimp is a common type of finfish which used in aquaculture. (True-False)
- 18- One method of dry fish feeds is feeding baskets. (True-False)
- 19- Aquaculture is organized production of a crop in the aquatic medium. (True-False)
- 20- One of the objectives of aquaculture is production of baits for fish. (True-False)
- 21- In developing countries, aquaculture is mostly practiced by large-scale. (True-False)
- 22- Pond culture depends on comparative economics of land use. (True-False)
- 23- Tastes and odour in fish is one of restraints in wastewater fish culture systems. (True-False)
- 24- No need for water replacement in cage culture. (True-False)
- 25- Acceptability is one of criteria of choice of artificial fish feeds. (True-False)
- 26- Quality and density of plankton are biological properties of water quality. (True-False)

27- In the brackish water pond the competition with agriculture is relatively more than static freshwater ponds. (True-False)

28- In running water culture, water is filtered continuously and recirculated. (True-False)

29- Oil cakes and kitchen waste are fish feeds of animal origin. (True-False)

30- Artificial feeding is important in intensive aquaculture. (True-False)

31- Monoculture of milkfish *Chanos chanos* is famous in Japan. (True-False)

32- Risk of theft is one of limitations of cage culture. (True-False)

33- Consumer acceptance is one of criteria for selection of species for culture. (True-False)

Q2-Choose the correct answer A, B or C (One mark each) Final

34-..... is a common type of finfish which used in aquaculture.

(Shrimp – Oysters – Carp)

35- Aquaculture is estimated to contribute million ton in fish production in 1983.

(12.8 – 10.21 – 11.21)

36- is a common type of shellfish which used in aquaculture.

(Prawns – Trout – Tilapia)

37- Molluscs is estimated to contribute..... million ton of aquaculture production.

(3.25 – 0.12 – 2.39)

38- Restrains in wastewater fish culture systems lie in

(Sterilization – sedimentation – Public acceptance)

39- Monoaquaculture as the name implies in the culture of

(a single species – two species – several species)

40- One of the factors has been unfavourable to the development of aquaculture is.....

(Aquatic pollution – reduction of fish production – screening)

41- Adoption of traditional techniques of aquaculture

(Extensive – Intensive – Semi-intensive)

42- One of the water quality data is

(Oxygen content – Foundation of the structure – Stability of the dikes)

43- One of the chemical properties of water is.....

(Temperature – pH – Turbidity)

44- One of the biological properties of water quality is

(Alkalinity – Salinity – Quality and density of plankton)

45- One of the vegetable artificial fish feeds is.....

(Trash fish – Slaughterhouse refuse – Cereals)

46- Methods of dry fish feeds are.....

(Mechanical dispensers – Feeding enclosures – Feeding baskets)

47- is estimated to contribute 0.12 million tons of aquaculture production.

(Sea weeds – Crustaceans – Finfish)

48- is a common type of plants which are used in aquaculture.

(Mussels – Mullet – Red alga)

49-is estimated to contribute 4.45 million to of
aquaculture production.

(Finfish – Crustaceans – Sea weeds)

50- is estimated to contribute 8.41 million to of
aquaculture production.

(Africa – Asia – Europe)

Q3- Choose true or false (One mark each) Mid-term + oral + a ty

51- Prevents loss of stock due to flooding is one of restrains ge
culture. (True-False)

52- One of the objectives of aquaculture is production of orna tal
fish. (True-False)

53- In wastewater fish culture water is filtered and recirc ed.
(True-False)

54- Artificial feeding is important in extensive aquaculture. ue-
False)

55- Trout is a common type of shellfish which used in aqua are.
(True-False)

56- One of the chemical properties of water quality is tur ity.
(True-False)

57- The fish farm should be sited primarily in areas unsuited her
agriculture uses. (True-False)

58- Fast growth is one of the desirable characteristics of aqua ure
organisms. (True-False)

59- Nutritional value is one of criteria for choice of artifi fish
feeds. (True-False)

60- Risk of theft is one of merits of cage culture. (True-False)

61- Oxygen starvation is one of causes of mortality in fish transportation. (True-False)

62- Salinity is one of biological properties of water quality. (True-False)

63- High fecundity is one of desirable characteristics of aquaculture organisms. (True-False)

64- Fish farms do not need electrical power. (True-False)

65- Species of fish to be produced is one of technological requirements for fish farm. (True-False)

66- Foundation of the structures is one of geotechnical data for fish farm. (True-False)

67- Mean monthly humidity is one of climatological factors for fish farm. (True-False)

68- Good table quality is one of desirable characteristics of aquaculture organisms. (True-False)

69- Physical injuries are causes of mortality in fish transportation. (True-False)

70- Transport of hardy fish in baskets and buckets are methods of packing and transport. (True-False)

71- Digestibility is one of criteria for choice of artificial fish feeds. (True-False)

72- Mill residues are artificial fish feeds of vegetable origin. (True-False)

73- Feeding enclosures is used in fish dry feeds. (True-False)

74- The site of fish farm should be faraway on transportation routes. (True-False)

75- One of the objectives of aquaculture is production of sport fish. (True-False)

76- Oil cakes and kitchen waste are fish feeds of vegetable origin.
(True-False)

77- The term aquaculture refers to the cultivation of only marine species. (True-False)

78- In advanced countries, aquaculture is mostly practiced by small-scale. (True-False)

79- Aquaculture is estimated to contribute 13.21 million tons in fish production in 1983. (True-False)

80- Quality and density of plankton are chemical properties of water quality. (True-False)

Best wishes

Prof. Usama M. Mahmoud



Answer the following questions (NOTE: Exam in THREE pages)

Section: I

Q1: Shade the correct answer: A, B, C, or D (1 Mark each, 25 Deg)

- 1- Scales in the sharks are:

A. Cycloid	C. Placoid
B. Ctenoid	D. Ganoid
- 2- One of the following is converted into thyroid gland of vertebrates:

A. Endostyle	C. Epipharyngeal groove
B. Pharyngeal gill slits	D. Peripharyngeal bands
- 3- The thermoreceptor in branchiostoma is:

A. Eye spots	C. Infundibular organ
B. Cephalic pigments	D. Kollickers pit
- 4- Excretion in vertebrates takes place by:

A. Unpaired kidney	C. Paired mesonephric kidneys
B. Unpaired pronephron	D. Paired mesonephric and metanephric kidneys
- 5- The pineal organ in lampreys is:

A. Present immediately behind the nostril	C. Present between the eye and the nostril
B. Present immediately behind the eye	D. Absent
- 6- Each gill pouch in petromyzon communicates with the respiratory pharynx by:

A. Gill lamella	C. External gill slits
B. Gill arches	D. Internal gill slits
- 7- In petromyzon optic lobes are present in:

A. Forebrain	C. Hindbrain
B. Midbrain	D. Medulla oblongata
- 8- Intermediates between cephalochordates and vertebrates:

A. Ostracoderms	B. Placoderms	C. Branchiostoma	D. Ammocoete larva
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- 9- In deuterostomes, blastopore forms:

A. The mouth	C. Brain
B. The anus	D. Kidney
- 10- The teeth in fish are meant for:

A. Tasting	B. cutting	C. reproduction	D. all
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- 11- The petromyzon larva is called:

A. Tornaria	C. Crinoid
B. Ammocoete	D. Nauplius
- 12- Exoskeleton in lampreys is:

A. Bony	C. Scaly
B. Cartilaginous	D. Absent
- 13- In lampreys paired appendages are:

A. 2 pairs	C. Absent
B. 3 pairs	D. 3 pairs
- 14- Muscles of trunk and tail in petromyzon are arranged in:

A. D shaped myotomes	C. F shaped myotomes
B. E shaped myotomes	D. C shaped myotomes
- 15- In petromyzon water of pharynx is prevented from entering the buccal cavity by:

A. Velum	C. Typhlosole
B. Endostyle	D. Spiral valve

- 16- Which of this is not a chordate character?
 A. A dorsal or hollow tubular nerve cord.
 B. A longitudinal supporting rod-like notochord.
 C. Pharyngeal gill slits.
 D. Diploblastic.
- 17- Which of the following animals is not a vertebrate?
 A. Fish
 B. Frog
 C. Sea horse
 D. Sea squirt
- 18- Which of the following is anamniote animal?
 A. Fish
 B. Reptilian
 C. Aves
 D. Mamalian
- 19- Coelom in Amphioxus is:
 A. Enterocoelic in origin
 B. Schizocoelic in origin.
 C. Pseudocoelom
 D. Absent altogether.
- 20- Atrium in Branchiostoma is formed by:
 A. Folding of endoderm.
 B. Folding of mesoderm.
 C. Folding of ectoderm.
 D. A pair of metapleural folds.
- 21- Wheel organ is a part of:
 A. Mouth
 B. Oral hood
 C. Velum
 D. Pharynx
- 22- One of the following is homologues structure to the teeth in human:
 A. Cycloid
 B. Ctenoid
 C. Placoid
 D. Ganoid
- 23- The intestine of Amphioxus is divided into:
 A. Midgut, lateral ciliary tract and diverticulum.
 B. Lateral ciliary tract, diverticulum and rectum.
 C. Midgut, ilio-colic rind and hindgut.
 D. Midgut, hindgut and rectum.
- 24- In Branchiostoma gonads are arranged metamerically one pair in each segment from:
 A. 25 to 51
 B. 29 to 51
 C. 25 to 58
 D. 29 to 58
- 25- Heart in vertebrates is:
 A. Dorsal, muscular
 B. Ventral, skeletal.
 C. Ventral, muscular.
 D. Dorsal, skeletal.

Q2: Shade (T) for True statements or (F) for false statements. (1 Mark each, 25 Degree)

- 26- Atriopore in Amphioxus is used for circulation.
- 27- Wheel organ in Amphioxus help in feeding.
- 28- Velum is used for water regulation entry, filtration, feeding in Amphioxus.
- 29- Kollicker's pit in Amphioxus is for feeding.
- 30- Oral fimbriae or papillae are used for fish attachment.
- 31- Spiral valve or typhlosole in dogfish is used for absorption.
- 32- Hindbrain in bony fish controls swimming movements.
- 33- Membranous labyrinth in dogfish has static and acoustic function.
- 34- Neruomast in dogfish used in equilibrium and disturbances detection.

- 35- Ampullae of Lorenzini is sense organ used as thermoreceptors.
- 36- Air bladder is used for hydrostatics, respiration, and sound production in fish.
- 37- Scales in fishes function as protection, age determination, and identification.
- 38- Masseter muscles in frog elevates mandible.
- 39- Tongue in frog helps in reproduction.
- 40- In petromyzon ventral aorta gives off seven pairs of afferent branchial arteries to gills.
- 41- Kidneys in lampreys are metanephric.
- 42- In petromyzon optic lobes are present in medulla oblongata.
- 43- Intermediates between cephalochordates and vertebrates Ammocoete larva.
- 44- The circuli of the cycloid scales are used to determine the sex of fish.
- 45- In Rohu gill rakers prevent the entry of food into gill chambers.
- 46- The frog swims in water by powerful forward thrusts of its forelimbs.
- 47- During hibernation or aestivation frog lives upon stored glycogen and fat.
- 48- The third eyelid in frog is called nictitating membrane.
- 49- The number of voluntary muscles in frog is 500.
- 50- Salivary glands in frog are absent.

Section: II Oral

Q3: Put ✓ or X in front of the following sentences:- (1 Mark each, 10 agree)

- 51- Labeo is an anamniote animal.
- 52- The term vertebrata is synonymous to chordate.
- 53- In vertebrates, the pharyngeal gill slits are not more than 9 pairs.
- 54- The teeth in frog are meant for preventing prey from slipping.
- 55- Exoskeleton in lampreys is cartilaginous.
- 56- Muscles of trunk and tail in petromyzon are arranged in D shaped myotomes.
- 57- The cartilage surrounding the buccal funnel in Petromyzon is annular cartilage.
- 58- Anticoagulant in petromyzon is secreted by mucous glands.
- 59- The eggs of lampreys are Teloleithal.
- 60- In Rohu frog stomach is U shaped.

Best wishes.....



University: Asyut

Animal classification

Total degree = 80

Faculty: Science

Code: 222 Z

Final exam.

Department: Zoology

June 2021

Time: 2 hrs.

Answer the following questions: Note: The questions are in 7 pages

Q1. Choose between brackets: (Final)

(50 marks)

1- The nervous system of *Buthus* is composed of free ganglia.

(a) eight

(b) no

(c) twenty one

2-.....can glow fluorescent under UV light.

(a) *Limulus*

(b) *Lepas*

(c) *Pseudogarypus*

3- belong/ (s) to Crustacea.

(a) Acarina

(b) Diplopoda

(c) No one

4- are the excretory system in *Scolopendra*.

(a) Nephridia

(b) Malpighian tubules

(c) Green glands

5-are unattached surface bivalves.

(a) Scallops

(b) Mites

(c) Scorpions

6- The oral surface inis directed upward.

(a) Crinoidea

(b) Asteroidea

(c) Ophiroidea

7- is unique system of hydraulic canals performs several functions.

(a) Cerata

(b) Ommatidia

(c) Water vascular system

8- is a hermaphrodite cirripede.

(a) *Balanus*

(b) *Squilla*

(c) *Eremina*

Follow the rest of questions

- 9- Mysis larva is found in
- (a) *Ophiocoma* (b) *Anodonta* (c) *Penaeus*
- 10-.....is found in *Nautilus*.
- (a) Crystalline style (b) Siphuncle (c) Copula
- 11- Copula occurs in
- (a) *Sacculina* (b) *Cyclops* (c) *Lepas*
- 12- moves efficiently and quickly.
- (a) *Squilla* (b) *Holothuria* (c) *Ophiocoma*
- 13- *Peripatus* is similar to
- (a) Arthropoda (b) Annelida (c) both
- 14- possess mantle.
- (a) *Sepia* (b) *Asteropectin* (c) *Argulus*
- 15- Basic mollusk's body is composed of regions.
- (a) three (b) five (c) seven
- 16- *Petasma* is found in male gonopod of.....
- (a) *Bagurus* (b) *Penaeus* (c) no correct answer
- 17- are excretory system in crustacea.
- (a) Book lungs (b) green glands (c) Malpighian tubules
- 18- Presence of spinnerets in
- (a) *Lycosa* (b) *Conus* (c) *Anodonta*
- 19- larva possesses a simple eye & 3 pairs of appendages.
- (a) Nauplius (b) Trochophore (c) Cyprid

Follow the rest of questions

- 20- Crustacea is characterized by
- (a) 2 pairs of antennae (b) biramous appendages (c) both
- 21- Parthenogenesis could be noticed in
- (a) *Pagurus* (b) *Daphnia* (c) *Limulus*
- 22-is a free living cirripede with stalk.
- (a) *Lepas* (b) *Balanus* (c) *Argulus*
- 23- *Argulus* has.....
- (a) exoskeleton (b) endoskeleton (c) no skeleton
- 24- Body segmentation in *Penaeus* is
- (a) 6:8:6 (b) 3:12:5 (c) 6:4:3
- 25- Pyloric and cardiac parts are in the stomach of
- (a) *Lycosa* (b) *Unio* (c) *Penaeus*
- 26- *Eremina* belongs to
- (a) Stylommatophora (b) Euphausiacea (c) Merostomata
- 27- Exoskeleton is composed of.....layers.
- (a) three (b) four (c) five
- 28-are optic units in Malacostraca.
- (a) Ommatidia (b) Pearls (c) Tagmata gastropod
- 29- The water vascular system is found in
- (a) *Pagurus* (b) *Lepas* (c) *Acanthaster*
- 30- Arthropods' exoskeleton is periodically removed in
- (a) molting (b) tagmatization (c) cryobiosis

Follow the rest of questions

31-have 2 pairs of appendages for each segment.

- (a) Chilopoda (b) Diplopoda (c) Pauropoda

32- *Artemia* is a crustacean.

- (a) freshwater (b) marine (c) terrestrial

33-occur/s in prosobranchia.

- (a) Torsion (b) Detorsion (c) Both

34-belongs to Branchiura.

- (a) *Daphnia* (b) *Argulus* (c) *Artemia*

35- Pseudoscorpions possess pair/s of antenna/e.

- (a) one (b) two (c) no

36- Chiton's fertilization occurs in

- (a) mantle groove (b) supra branchial chamber (c) oviduct

37- *Holothuria* has

- (a) minute endoskeleton (b) hard exoskeleton (c) no skeleton

38- *Nautilus* belongs to

- (a) Cephalopoda (b) Pauropoda (c) Branchiopoda

39-are viviparous.

- (a) Onychophorans (b) Cephalopods (c) sea stars

40-can secrete its shell.

- (a) *Eremina* (b) *Pagurus* (c) *Octopus*

41- occurs during early developmental stages.

- (a) Torsion (b) Detorsion (c) coiling

Follow the rest of questions

42- The diagnostic character of Arthropoda is

- (a) jointed legs (b) respiration (c) segmentation

43-has 8 shell plates.

- (a) *Balanus* (b) *Chiton* (c) *Limulus*

44-lack shell, mantle cavity and gills.

- (a) Nudibranchia (b) Pulmonata (c) Prosobranchia

45- lost its symmetry after torsion.

- (a) Head (b) Visceral mass (c) Foot

46- are hard Bottom Burrowers.

- (a) Shipworms (b) mussels (c) Both

47- Harpoon is found in

- (a) *Chiton* (b) *Dentalium* (c) *Conus*

48- can expel ink to confuse predators.

- (a) *Sepia* (b) *Octopus* (c) Both

49- Capitulum is found in

- (a) ticks (b) spiders (c) scorpions

50- Balance organ in *Penaeus* is

- (a) maxilla (b) cheliped (c) antennule

Q2. Put (✓) or (X): (Mid-Term, Activity & oral) (30 marks)

51- A capitulum is secreted around the foreign particle between the shell & mantle. ()

52- *Ophiocoma* belongs to Echinodermata. ()

53- *Cyclops* moves by jet propulsion. ()

Follow the rest of questions

- 54- *Peripatus* is similar to Mollusca. ()
- 55- *Buthus* belongs to Prosobranchia. ()
- 56- All spiders have spinnerets. ()
- 57- Centipedes protect themselves by secreting ink. ()
- 58- *Argas* is protostomate. ()
- 59- Onychophorans has ladder form nervous system. ()
- 60- *Neptunus* has internal shell. ()
- 61- *Artemia* has flexible arms and no oral grooves. ()
- 62- Green glands are chambers with leaf-like plates for exchanging gases. ()
- 63- The main character of Chelicerata is presence of 6 pairs of appendages. ()
- 64- Tagmatization is functional regions are formed by fusion of groups of segments. ()
- 65- Radula is a thick epidermis that covers the dorsal side of the body & houses all systems. ()
- 66- Horseshoe crabs' blood is important medically. ()
- 67- Arthropods have little diversity and abundance. ()
- 68- The fusion of groups of segments into functional regions is called coiling. ()
- 69- *Argulus* belongs to pycnogonids. ()
- 70- The basic trilobite body consists of three tagmata. ()
- 71- *Conus* has harpoon. ()
- 72- Aristotle's lantern is the jaw apparatus in sea urchins. ()
- 73- Trochophore larva has bivalve shell with 6 pairs of thoracic cirri. ()
- 74- Mantle is a tongue-like protrusible structure bearing rows of minute teeth. ()

Follow the rest of questions

- 75- Mussels are Soft Bottom Burrowers. ()
- 76- *Octopus* has well-developed brain enclosed in a cartilaginous skull. ()
- 77- Chilopoda are carnivorous. ()
- 78- Exocuticle is absent from joints. ()
- 79- Coiling is a process during which the visceral mass turns either sinistral or dextral. ()
- 80- The reproductive appendage in spider is pedipalp. ()

----- End -----

د. هناء عاطف جودة

بالتوفيق و السداد

Answer the following questions and record answer in the "Bubble Sheet" given to you (80 marks in two parts: the 1st part represents the final exam (50 marks) and the 2nd part represents the midterm, oral and activity (30 marks)).

A- Final (1-50): Choice the correct answer A, B, C or D: (50 marks, one mark each):

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) none of the above

2. Anabolic steroids that stimulate growth include:

- a) testosterone and estrogen
- b) prolactin
- c) corticosteroids
- d) all the above
- e) both a & c

3- Maturity stage 1 is concerned with

- a) Oocyte development
- b) Vitellogenesis
- c) Oocyte maturation
- d) Spawning
- e) None of the above

4- Maturity stage 3 is concerned with

- a) Oocyte development
- b) Vitellogenesis
- c) Oocyte maturation
- d) Spawning
- e) Oocyte resorption

5- 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) None of the above

6- 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) None of the above

7- 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) None of the above

8- Euophagous plankton feeders have:

- a) Mixed diet.
- b) A limited sort of food.
- c) One sort of food.
- d) None of the above

9- Maturity stage 4 is concerned with

- a) Oocyte development
- b) Oocyte resorption
- c) Vitellogenesis
- d) Oocyte maturation
- e) Spawning

10- Oocyte maturation in fishes includes:

- a) Germinal vesicle (nucleus) migration
- b) Resumption of meiosis (cell division)
- c) Water uptake
- d) All the above

11- 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

12- Maturity stage 2 is concerned with

- a) Oocyte development
- b) Vitellogenesis
- c) Oocyte maturation
- d) Spawning

13- 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) None of the above

14- Stenophagous plankton feeders have:

- a) Mixed diet.
- b) A limited sort of food.
- c) One sort of food.
- d) None of the above

15- 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

16- Monophagous plankton feeders have:

- a) Mixed diet.
- b) A limited sort of food.
- c) One sort of food.
- d) None of the above

17- 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.

18- 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.

19- 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.

20- 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.

21- 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.

22- Overfished stocks have:

- a) Fast growth and good condition
- b) Small average size of fish caught
- c) Both a&b
- d) None of the above

23- 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

24- Schreckstoff is

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

25- Criteria of back calculations in fish growth include:

- a) Number of scales is variable throughout life
- b) Growth of scale (or hard part) is not proportional to growth of fish
- c) Annuli formed yearly at different times
- d) None of the above
- e) All the above

26- Gonadosomatic index equal:

- a) $\text{Gonad weight} \times 100 / (\text{Fish weight} - \text{gonad weight})$.
- b) $\text{Gonad weight} \times 100 / (\text{Fish length} - \text{gonad weight})$.
- c) $\text{Gonad weight} / (\text{Fish weight}^{**3})$.
- d) None of the above

27- implications for fecundity estimation in indeterminate spawners are due to:

- a) Counts of eggs do not indicate annual fecundity
- b) Continuous new batches (size distribution)
- c) Protracted season
- d) All the above
- e) None of the above

28- All the following anatomical

requirements are for herbivores except:

- a) Small mouth with nibbling mouth.
- b) Gizzard like stomachs.
- c) The sharp teeth on multiple bones
- d) Highest relative length of gut.
- e) Beak-like structure.

29- Studying food and feeding habits

should be executed by one of the following methods except:

- a) Direct observation.
- b) Back calculation from rings on hard structures

- c) Observation in captivity.
- d) Examination of contents of the stomach.

30- Laterally compressed forms, with pectoral fins high on the body, with pelvic fins immediately below; small mouths, eyes large, snout short are:

- a) Eel-like fishes
- b) Ambush predator
- c) Surface-oriented fishes
- d) Deep-bodied fishes

31- Hagfishes are separated from Craniata as sister group to vertebrates because they are characterized by the following except:

- a) A single semicircular canal
- b) Capable of hyperosmoregulation
- c) No neuromast cells and no extrinsic eye muscles.
- d) Incapable of nervous regulation of the heart.
- e) No vertebrae

32- The following taxonomic characters discriminate between Chondostei, Holostei and Teleostei:

- a) Caudal fin- spiracle- notochord
- b) Vertebral ossification- upper jaw
- c) skull roof- fulcra- cheek- paired fins
- d) all the above
- e) none of the above

33- A clade is defined by

- a) shared characters called apomorphies

- b) shared derived characters called synapomorphies
- c) shared characters called homoplasies
- d) unshared characters called paraphylies.

34- Extinct jawless fishes are called

- a) acanthodians
- b) Placoderms
- c) Ostracoderms
- d) Agnathans.

35- Otophysi share the following synapomorphy:

- a) Pterygiophores
- b) Schrekstoff
- c) Weberian apparatus
- d) Retractor dorsalis.

36- Which of the following statements is true?

- a) Lampreys comprise hundreds of extant species, most of which are parasitic
- b) Lampreys have a single gonad, external fertilization, and a long larval stage known as the bipinnaria larva
- c) No lampreys ascend freshwater streams to breed—they are only marine
- d) The larva of lampreys bear a remarkable resemblance to amphioxus.

37- Lamprey shares *Oreochromis niloticus* with all the following characters except:

- a) Two or three semicircular canals
- b) Vertebrae and true neuromast organs

- c) Extrinsic eye muscles and hyperosmoregulation
- d) True jaws and scales

38- Teleost success was achieved by

- a) Size and shape variability
- b) Maneuverability and protrusible premaxillae
- c) Reaction plasticity with evolution of intelligence
- d) All the above
- e) b and c only

39- Fishes are

- a) Paraphyletic group.
- b) Monophyletic group.
- c) Polyphyletic group.
- d) None of the above

40- Agnatha are

- a) Paraphyletic group.
- b) Monophyletic group.
- c) Polyphyletic group.
- d) None of the above

41- Chondrichthyes are

- a) paraphyletic group.
- b) Monophyletic group.
- c) Polyphyletic group.
- d) None of the above

42- Perciformes are

- a) paraphyletic group.
- b) Monophyletic group.

- c) Polyphyletic group.
- d) None of the above

43- The key traits account for ostracoderm success are

- a) True jaws and paired fins
- b) Bony dermal plates and internal skeleton
- c) Use of filter feeding and first use of bone
- d) All the above
- e) None of the above

44- Evolutionary trends in fish morphology include

- a) A shift in position of the paired fins
- b) An increase in overall spinyiness
- c) Changes in body shape
- d) All the above
- e) Only a and c

45- Each of the following methods is used to measure reproductive indices

- a) Raise in a controlled environment
- b) Mark and recapture
- c) Length – frequency distribution
- d) All the above
- e) None of the above

46- Foraging strategy in herbivores is

- a) Pursuit as in barracuda
- b) Stalking as in trumpetfish
- c) Ambush as in lizardfish
- d) All the above
- e) None of the above

47- Mode of reproduction in 90% of bony fish is

- a) Ovoparity
- b) Viviparity

c) Ovoviviparity

48- Mode of reproduction without direct maternal nourishment (advanced at birth) in most sharks and rays is

- a) Ovoparity
- b) Viviparity
- c) Ovoviviparity

49- Mode of reproduction with direct nourishment from mother (fully advanced at birth) in some sharks and perches is

- a) Ovoparity
- b) Viviparity
- c) Ovoviviparity

50- Modes of ovoparity include

- a) Broadcasting spawning
- b) Demersal non-guarding
- c) Demersal guarding
- d) Brooders
- e) All the above.

B- MidTerm+Oral+Activity (51-80): Choice the correct answer A, B, C or D: (30 marks, one mark each):

51- The catfish *Glyptothorax* sp. has:

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

52- Sharks has:

- a) Dorsal fin as modified sucker
- b) Pectoral fins modified as serrate

c) Anal fin as gonopodium

d) Pelvic fins modified as claspers

53- *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

54- Eels, sand lance have ----- body:

- a) Filiform
- b) Fusiform
- c) Compressiform
- d) Depressiform

55- Streamlined fishes, with pointed heads, terminal mouths, narrow caudal peduncles, and forked tails are:

- a) Rover-predator
- b) Ambush predator
- c) Surface-oriented fishes
- d) Bottom fishes

56- Yellow Tail Snapper has mouth:

- a) Superior
- b) Inferior
- c) Subterminal
- d) Terminal

57- Predators often have mouth:

- a) Superior
- b) Inferior
- c) Subterminal
- d) Terminal

58- Scavengers have mouth:

- a) Superior
- b) Inferior
- c) Subterminal
- d) Terminal

59- 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 characteristics
- d) A genetic method of phylogenetic reconstruction

60- Laterally compressed forms, with pectoral fins high on the body, with pelvic fins immediately below; small mouths, eyes large, snout short are:

- a) Eel-like fishes
- b) Ambush predator
- c) Surface-oriented fishes
- d) Deep-bodied fishes

61- Tarpon *Megalops atlanticus* has mouth:

- a) Superior
- b) Inferior
- c) Subterminal
- d) Terminal

62. 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 characteristics
- d) A genetic method of phylogenetic reconstruction

63. 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

64. The recent discovery of an ancient placoderm has allowed to:

- a) better understand the beginnings of the jaw and the evolution of jawed vertebrates
- b) better place conodonts in vertebrate phylogenies
- c) better place osteichthyes in vertebrate phylogenies
- d) all of the above.

65- ----- caudal fin provides Large amount of surface area allowing sharp turns and quick starts to avoid predators:

- a) Homocercal forked
- b) Homocercal truncate
- c) Homocercal rounded
- d) Heterocercal

66- The upper jaw not fused to the braincase but the hyomandibular arch is involved in jaw suspension which is known as:

- a) Autostylic jaw suspension
- b) Hyostylic jaw suspension
- c) Amphistylic jaw suspension
- d) None of the above

67- Northern puffer and clownfish have ----
----- caudal fin:

- a) Homocercal forked
- b) Homocercal lunate

c) Homocercal truncate

d) Homocercal rounded

68- Iteroparity means that most fishes breed more than once seasonally over several years in lifetime. This statement is:

a) True

b) False

69- What are the two major groups of extant cartilaginous fishes:

a) Rays and Sharks

b) Skates and Rays

c) Sharks and Chimeras

d) Placoderms and Chondrichthyans

70- Coelacanth is often called living fossil because:

a) Their external morphology has not changed much compared to their fossil relatives

b) Their DNA has not changed much compared to their fossil relatives

c) It is a nickname that should be dropped, if they are living they are not fossils

d) all of the above

71- Several fossil fishes have armored bodies. Their disappearance shows that:

a) Their armors were effective against predators. Once those disappeared, the armors were shed

b) That strategy held until morphologies with higher fitness evolved

c) Storing rare chemicals in armors was useless

d) random chance eliminated these species

72- 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

73- Pterygiophores are:

a) a connection between vertebrae and dorsal and anal fin

b) rays under the mouth that help ventilation

c) rays attached to gill arches that help in feeding

d) holes on the side of hagfish that produce slime

74- The transition between jawless fishes and gnathostomes is reflected by the appearance of:

a) jaws

b) stomach

- c) paired fins
- d) all of the above

75- Fishes are paraphyletic, this is due to the evolutionary position of fishes included in the:

- a) acanthodians
- b) sarcopterygians
- c) ostracoderms
- d) Polypteriformes

76- Conodonts are

- a) regarded by some as the earliest fishes
- b) denticle-like structures used to date specific geological strata
- c) organisms that swam in ancient oceans, around 500 million years ago
- d) all of the above
- e) none of the above

77- Often, ancestral groups of fish comprise one or few species, while more derived groups of fishes have large number of representative species. Why?

- a) because earlier fishes had fewer representatives

b) because modern fishes have more representatives

c) because modern fishes outcompeted basal lineages

- d) because many basal species are extinct
- e) c and d

78- The following traits of Osteichthyes are synapomorphy except:

- a) Lateral line canals
- b) Opercular and pectoral dermal bones
- c) Epidermal teeth
- d) Fin webs supported by rays
- e) Endochondral bone.

79- Osteichthyes in which typically the paired fins do not have a fleshy basal lobe, but supported by bony rays, are:

- a) Actinopterygii
- b) Dipnoi
- c) Sarcopterygii
- d) Crossopterygii

80- Fishes having 50-75 vertebrae are more advanced than those with 24 vertebrae. This statement is:

- a) True
- b) false

With best wishes- Imam Mekkawy



Final Exam of invertbrates (I)
2020-2021



Assiut University
Faculty of Science
Department of Zoology

Time: 2 Hours
Corse Code: 220 Z
Total dcgree:50 + 10 Oral

Answer the following questions:

Note : Questions are in (5) pages

Q I: Choose the correct answer:(35 marks one for each point):

1. *Fasciola hepatica* lives in:

A. Liver of sheep

B. Blood of sheep

C. Intestine of sheep

D. Spleen of sheep

2. What is true about *Taenia saginata*?

A. Life history has pig as intermediate host

B. There are two large suckers on scolex

C. Rostellar hooks are absent

D. Rostellum has double circle of hooks

3. Which constitutes the correct pairing?

A. Flatworm-*Planaria*

B. Dogfish-Sea Urchin

C. Fish-Snail

D. None of the above

4. Which one of the following is not typical to all poriferans?

A. Perforated body

B. Choanocytes

C. System of pores and canal

D. Presence of sponging fibres

5. Which of the following is a free living flat worm?

A. *Planaria*

B. *Taenia*

C. *Fasciola*

D. *Pheretima*

6. Which pair of cells is present in epidermis of *Hydra*, but not in its endoderm?

A. Stinging cells and interstitial cells

B. stinging cells and germ cells

C. Gland cells and germ cells

D. Stinging cells and Gland cells



7. Incurrent canals are lined by:

- A. Choanocytes B. Pinacocytes C. Porocytes D. None of the above

8. Collar cells occur in:

- A. Starfish B. Hydra C. Sandworm D. Sponges

9. *Schistosoma* is a parasite found in:

- A. Blood B. Liver C. Lungs D. Intestine

10. Malaria is caused by

- A. Ascaris B. *Plasmodium* C. Foulair D. *Amoeba*

11. Skeleton made of spongin fibers occurs in:

- A. Calcarea B. Demospongiae C. Hexactinellida D. Both (a) and (b)

12. Which of the following is a member of phylum porifera?

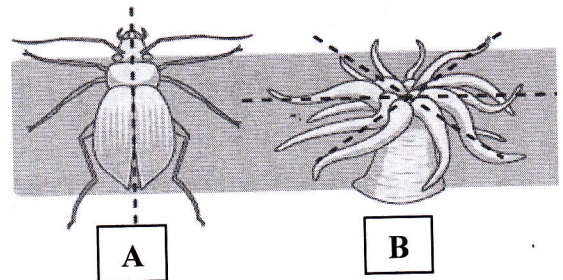
- A. Sycon B. Leucosolenia C. Spongilla D. All of them

13. Which of the following cells are useful for feeding in sponges?

- A. Collar cells B. Pinacocytes C. Porocytes D. Sclerocytes

14. The type of symmetry is "A" and "B" is:

- A. Radial and bilateral respectively
B. Both are radial
C. Bilateral and radial respectively
D. Both are bilateral



15. Which one of the following is an example of Platyhelminthes:

- A. *Trypanosoma* B. *Schistosoma* C. *Plasmodium* D. *Amoeba*

16. Excretory system of *Planaria* is characterized by:

- A. Pinocytes B. Choanocytes C. Nematocytes D. Flame cells

17. Pseudopodia in *Amoeba* help mainly in:

- A. Locomotion B. Food capturing C. Engulfment D. All of the above

18. Excretory system of *Allolobophora* is characterized by:

- A. Pinocytes B. Nephridia C. Choanocytes D. Nematocytes



19. Primitive nervous system is found in

- A. Porifera B. Echinodermata C. Cnidaria D. Annelida

20. The egg is oval with lateral spine in

- A. *Schistosoma heamatobium* B. *Schistosoma mansoni*
C. *Fasciola hepatica* D. *Fasciola gigantica*

21. The members of following phylum are exclusively marine, radially symmetrical and diploblastic

- A. Echinodermata B. Cnidaria C. Porifera D. Annelida

22. Schizont stage of life cycle of malarial parasite occurs in:

- A. RBC of man B. Stomach of mosquito
C. Blood of mosquito D. None of these

23. Porifera are considered as

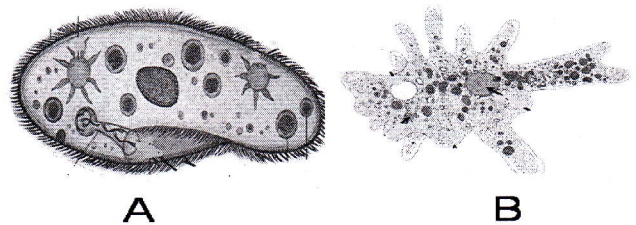
- A. filter feeding B. Sessile C. both A&B D. Endoparasites

24. Which of the following is not characteristic of the animal kingdom?

- A. Exclusive reliance on sexual reproduction.
B. Motility at some stage of life cycle.
C. Multicellularity ;cells form tissues and organs.
D. Embryonic development during the life cycle.

25. Animal (A) differs from animal (B) in

- A. Way of movement
B. number of cells
C. Nutrition
D. None of these



26. *Hydra* sp. is characterized by:

- A. Sexual reproduction via gametes B. Nematoblasts
C. Mouth surrounded by 6-10 tentacles D. All

27. Choanocyte cells in the sponge body wall facilitate the following:

- A. Reproduction B. Excretion
C. Digestion of food D. Create water currents



28. Polyp and Medusa forms present in:

- A. Protozoa B. Cnidaria C. Platyhelminthes D. Nematodes

29. Members of phylum Platyhelminthes are called:

- A. Flat worm B. Segmented worm
C. Round worm D. Walking worm

30. Identify the proper sequence in the life history of liver fluke.

(1) Cercaria (2) Metacercaria (3) Sporocyst (4) Redia (5) Miracidium.

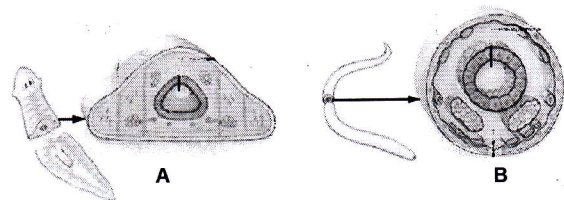
- A. 2-1-3-5-4 B. 5-3-4-1-2 C. 5-4-2-1-3 D. 5-4-3-1-2

31. Infective stage of *Schistosoma* is:

- A. Cercaria B. Ovum C. Cysticercus D. Snail

32. The opposite figure (A) and (B) represents

- a. Acoelomates and coelomates
b. coelomates and acoelomates
c. Acoelomates and pseudocoelomates
d. None of the above



33. Bilaterally symmetrical and acoelomate animals are exemplified by

- A. Platyhelminthes
B. Nematodes
C. Annelida
D. Ctenophora

34. Alimentary canal is absent in:

- A. *Taenia* and *Schistosoma* B. *Ascaris* and *Fasciola*
C. *Taenia* and *Echinococcus* D. *Tricuris* and *Fasciola*

35. Cercaria stage of *Fasciola hepatica* leads to:

- A. Sporocyst B. Redia C. Miracidium D. Metacercaria



Q II: Put (✓)for the correct sentences and (X) for the wrong one:(15 marks one for each point)

- 1- Segmented worms are characterized by radial symmetry ().
- 2- Nematodes are considered as coelomate animals ().
- 3- *Planaria* lacks nervous system ().
- 4- Schizocoel is well developed in Segmented Worms ().
- 5- Whittaker classified living organisms into seven kingdoms ().
- 6- No circulatory system in phylum Platyhelminthes ().
- 7- Cysticercus is the larva of Tapeworm ().
- 8- Members of phylum Cnidaria are pseudocoelomates ().
- 9- Most species of Trematoda are marine and benthic ().
- 10- Tapeworm, roundworm and pinworm are endoparasites of human intestine. ().
- 11- Members of Kingdom Fungi are heterotrophs ().
- 12- Anus is absent in *Fasciola* and *Schistosoma* ().
- 13- Parazoa is characterized by tissue level of organization ().
- 14- The pinacoderm - an outer layer of flattened cells in Sponges ().
- 15- Cercaria of *Fasciola gigantica* is elongated head, biforked tail ().

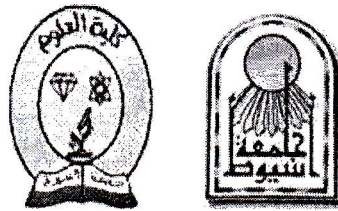
Q III: The Oral question: Choose the correct answer :(10 marks 2 for each point).

- 1- Smallest taxon of classification is (Kingdom- Family- Species).
- 2- Linnaeus evolved a system of nomenclature called (Monomial- Binomial- Polynomial).
- 3- The cavity of cnidarians is called (Spongocoel- Gastrovascular cavity- Haemocoel).
- 4- The free living platyhelminthes are (Cestoda –Trematoda- Turbellaria).
- 5- At which stage in the life cycle of *Taenia solium*, infects the intermediate host? (Oncosphere -Hexacanth larva –Cysticercus larva).

WITH MY BEST WISHES

End

Dr. Fatma El-Zahraa A. Abd El-Aziz



✿ First question (Final):

Which sentence is True, and which is False (One mark each):

- 1- Stratified epithelium is cellular sheet formed of one layer of cells.
- 2- In appositional growth, the cartilage cells in the center divide to form groups of young chondrocytes which resulting in growth of the cartilage from its center.
- 3- There is no connective tissue in the central nervous system; instead, there are the neuroglia.
- 4- Ballooning degeneration is a result of ion and fluid homeostasis that led to an increase of intracellular water.
- 5- Glandular epithelium is collection of cells to form glands.
- 6- Fibroblast number increases during healing of wounds and in cases of C. T. damage.
- 7- Bone is a firm, rigid, flexible, and dense type of C. T. It is poor in blood supply.
- 8- The structural and functional units of muscles are formed of special elongated cells known as muscle fibers.
- 9- Peripheral nervous system consists of the brain and the spinal cord.
- 10- Hydropic degeneration is derived from the fact that the cells undergoing this form of cell death by increase in size.
- 11- Neuro-epithelium is connective cells act as receptors.
- 12- Unilocular white Fat cell contain multiple small globules of fat rich in pigments.
- 13- Matrix of Cartilage has no blood vessels, no lymph vessels, and no nerves.
- 14- Myofibrils are responsible for muscle contractions.
- 15- The neuron is the structural and functional unit of the nervous system.
- 16- Congestion is a localized increase of blood in a particular tissue due to poor venous outflow.

- 17- Simple squamous Epithelium forms a thin smooth lining to blood vessels to allow easy passage of blood.
- 18- Undifferentiated Mesenchymal cells can differentiate into other types of C. T. cells.
- 19- White fibrocartilage presents in the intervertebral discs.
- 20- Smooth muscles are voluntary in action.
- 21- The cell membrane of the nerve cell is very thick.
- 22- Transitional epithelium facilitates the active filtration of urine in kidney.
- 23- Endothelial cells can divide to form new capillaries in tissue injuries.
- 24- Cartilage is a calcified osteoid tissue rich in blood supply and has a solid matrix.
- 25- Rough endoplasmic reticulum in skeletal muscles called Sarcoplasmic Reticulum.
- 26- Nissl granules are not present in axon.
- 27- In the stomach, simple cuboidal cells secrete mucin.
- 28- Free macrophages can kill certain viruses through secretion of histamine.
- 29- Compact bone present in the shafts of long bones.
- 30- The arrangement of myofibrils near each other shows transverse striations in smooth muscles.
- 31- The axon hillock is the conical expansion of the axon at its origin from the nerve cell.
- 32- In Transitional Epithelium, the presence of mucous substance between the cells, facilitate gliding of cells on each other.
- 33- White Collagenous Fibers are soft, strong, and flexible but not elastic in nature.
- 34- Osteoclast cells are mature cells which maintain the bone matrix.
- 35- Sarcomere is the area of the muscle fiber enclosed between two-Z-Discs.
- 36- The Myelin Sheath is a fatty tubular covering around the dendrites.
- 37- Exocrine glands are ductless glands secreting hormones directly in the blood.
- 38- Reticular fibers can branch and anastomose to form a network.
- 39- Osteoblast cells secrete enzymes that dissolve bone matrix during ossification.
- 40- Actin filaments extend in the dark bands only.
- 41- At the node of Ranvier, the axon is covered by myelin sheath.

- 42- According to changes in the secretory cells, the glands are classified into: Merocrine, Apocrine and Holocrine gland.
- 43- Yellow elastic connective tissue is a very dense type of C. T.
- 44- Cardiac muscles contract spontaneously (involuntary in action).
- 45- Lantermann's clefts are the areas of discontinuities in the myelin sheath.
- 46- The mesothelium is the simple squamous epithelium which lines the heart and blood vessels.
- 47- Osteocytes cannot divide.
- 48- Microglia eat foreign bodies so, they are called "Policeman of The Brain".
- 49- Ependymal cells are simple columnar ciliated cells which line the central canal of the spinal cord and brain ventricles.
- 50- Schwann cells form the myelin sheath around axons.

✿ Second question (Med term+Oral +Activity):

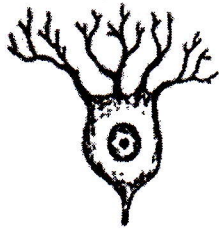
Choose the correct answer A, B or C (One mark each):

- 51- The animal body consists of types of tissue.
A- 3 B- 4 C- 5
- 52- can catch antigens and transport them to lymphocyte.
A- Plasma cells B- Monocytes C- Histocytes
- 53- Hyaline cartilage is covered by a vascular membrane called
A- perichondrium B- basement membrane C- endothelium
- 54- Nissl Granules are specific basophilic bodies consisting of masses of
A- Golgi apparatus B- lysosomes C- rough endoplasmic reticulum
- 55- Groups of chondrocytes are surrounded with lacuna and capsule and are called
A- chondroblasts B- cell nests C- osteocytes
- 56- In Myoepithelium, the cells are modified to
A- contract. B- absorb. C- sense.

- 57- Foreign Body Giant Cell are collection of some which can surround and destroy bacteria.
 A- macrophages B- lymphocytes C- monocytes
- 58- helps in maintaining the patency of respiratory passages.
 A- Bone B-Muscle C- Cartilage
- 59- Transitional Epithelium is a stratified type of epithelium which is present in the
 A- skin B- urinary tract C- liver
- 60-cells form the stroma of glands and bone marrow.
 A- Plasma B- Reticular C- Ependymal
- 61- Bone acts as a reservoir for
 A- potassium B- calcium C- magnesium
- 62- are not present in mature nerve cells.
 A- Centrioles B- Mitochondria C- Lysosomes
- 63- In glands, the tips or the secretory cell of the gland are detached and come out with the secretory products.
 A- Holocrine B- merocrine C- Apocrine
- 64- release an immediate hypersensitivity factors which activate the defense system of the body.
 A- Mast cells B- Plasma cells C- Lymphocytes
- 65- connective tissue presents all over the body except between Brain Cells.
 A- Reticular B- Mucoid C- Areolar
- 66- Pyknosis, karyorrhexis and karyolysis are features of
 A-apoptosis B- necrosis C- autophagy
- 67- tissue covers a surface or lines a cavity or forms a gland.
 A- Epithelial B- Connective C- Muscular

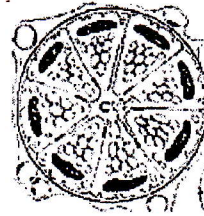
- 68- cannot divide and have no phagocytic activity, but they increase in certain inflammatory conditions to secrete specific antibodies.
A- Lymphocytes B- Histocytes C- Plasma cells
- 69- The Haversian System or Osteon is the structural unit of
A- spongy bone B- compact bone C- bone marrow
- 70- Muscle forms the main wall of the heart and is known as
A- epineurium B- pericardium C- myocardium
- 71- cells are formed by fusion of Multiple monocytes.
A- Osteoclast B- Osteoblast C- Osteocytes
- 72- The are the functional contractile units of the muscle fiber.
A- sarcolemma B- sarcoplasm C- sarcomeres
- 73- protect skin from sun and facilitate eye vision.
A- Melanin pigments B- neuroglia C- lymphocytes
- 74- The cell membrane of muscle fibers is known as
A- sarcolemma B- plasmalemma C- axolemma
- 75- In skeletal muscles, the light bands reflect light equally and are called
A- Anisotropic B- Isotropic bands C- H-zone
- 76- Connective Tissue present in the umbilical cord of the embryo.
A- Reticular B- Areolar C- Mucoid

77-



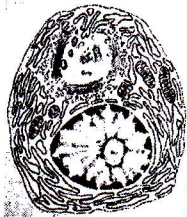
- A- Pyriform multipolar
- B- Stellate multipolar
- C- Pyramidal multipolar

78-



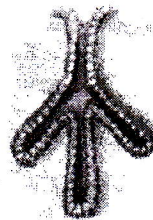
- A- Serous acini
- B- Mucous acini
- C- Mucoserous acini

79-



- A- Monocyte
- B- Plasma cell
- C- Lymphocyte

80-



- A- Simple tubular gland
- B- Compound tubular gland
- C- Simple branched tubular gland

END OF QUESTIONS

WITH MY BEST WISHES

Dr. Alshaimaa Ahmed Alghriany