Assiut University
Faculty of Science
Zoology Department

كلية العلوم - جامعة أسيوط

Time: 2 hour
Level: 3&4
Course Code: 316Z

Second Semester Histochemistry Exam (2022/06/05)
Answer the following questions: (50 marks)

I: Choose the correct answer for the following (25 marks)

1-Limit of resolution is defined as .....distance between two details below which they appear as one

A) Shortest B) Longest C) Medium D) None of these

2-Numerical aperture of the microscope depends on .....

A) Refractive index of the media B) Force of lenses C) Force of eye piece D) all these

3-Limit of resolution of the microscope can't exceed about the.....

A) 1/2 B) 1/4 C) 3/4 D) 1 wave length

4-Solitary, irregular network and consists of elastin .....

A) Yellow B) White C) Reticular D) None of these

5- Melting points of hard paraffin is ..... plus 4° C

A) 40°C B) 60 °C C) 37 °C D) None of these

6-Quicker and easier techniques is.....

A) Coating B) Stripping C) Wire loop D) None of these

7-The effects of radioactivity increases with .....of distance between the section and photographic emulsion.

A) Decrease B) Increase C) A&B D) None of these

8-They serve as intermediates in metabolism, storage products and structural components of membranes and intracellular matrix

A) Proteins B) Carbohydrates C) Lipids D) A&B

9-Oligosaccharides are formed by the polymerization of..... Monosaccharides.

A) 3-10 B) 5-20 C) 2-8 D) A&C

10-Mannitol belongs to……..

A) Polysaccharides B) Monosaccharides C) Sugar alcohols D) None of these

11- They are very sensitive to temp, pH and ionic concentration

A) Hormones B) Enzymes C) Lipids D) all of these

12-Dehydrogenase is one of……enzymes

A) Hydrolases B) Nuclease C) Oxidoreductases D) Transferases

13- Metal precipitation technique is manly applied in the demonstration of ……

A) Hydrolases B) Nuclease C) Phosphatase D) A&C

14- …… are used to digest glycogen

A) Amylase B) Phosphatase C) Diastase D) A&C

15- For the illustration of microsomes, we can use enzyme detection of……

A) Diastase B) Esterase C) ATPase D) Acid Phosphatase

16- It is formed of about 30000 glucose molecules in the form of branching chain having a bushy appearance and is water soluble.

A) Glycogen B) Starch C) Cellulose D) all of these

17-Vitamine A belongs to ……

A) Fatty acids B) Paraffins C) Carotenoids D) A&C

18- They are formed of glycerin esterified with two fatty acids and a molecule of phosphorylcholine ……

A) Cephalins B) Lecithins C) Plasmalogens D) Sphingomyelins

19- Sudan black B is an excellent stain to……

A) Fatty acids B) Triglycerides C) Phospholipids D) A&C

20- Schultz method can be used in the detection of ……

A) Free fatty acids B) Cholesterol C) Triglycerides D) A&B

21- The acid hematin method can be used in the detection of ……

A) Free fatty acids B) Cholesterol C) Triglycerides D) Sphingomyelin

22- ..... is specific method for the detection of arginine in the proteins

A) Sagaguchi method B) Millon's reaction C) Ninhydrin-Schiff D) Mercury orange

23- The uracil base of RNA belongs to

A) Pyrimidines B) purines C) A&B D) None of these

24- .....is the commonest and most frequently used antibody in immunohistochemistry

A) IgG B) IgM C) IgE D) A&B

25- Antigen retrieval can be done using .....

A) Trypsin B) Proteinase K C) A&B D) None of these

II: Mark the following True (T) or False (F) (25 marks)

26- Resolution is the power of the microscope to distinguish fine details. ( )

27- Acidic stain contains anionic groups which stain basic proteins. ( )

28- Myoglobin is transported proteins which carry oxygen in RBCs. ( )

29- Protective proteins such as growth hormones. ( )

30- Cholesterol gives positive metachromatic when stained by SBB. ( )

31-Oil red stain fats blue. ( )

32- Merocrine secretion is similar to normal exocytosis. ( )

33- Deoxyribose is detected by the use of Schiff's reagent after hydrolysis with hot M-HCL at 60°C. ( )

34-Staining of H&E in room temperature is good. ( )

35 -PAS techniques useful for detection of proteins. ( )

36- Autocrine secretion is affected upon the cell itself. ( )

37- Auxochromic groups of stain give the color to the dyes such as quinoid ring. ( )

38- Saliva can work at room temperature. ( )

39- Lower kinetic energy of isotope has the low resolution. ( )

40- COOH one of groups responsible for dye color. ( )

41- Stripping must be prepared in laboratory with daily light. ( )

42- Reticular fibers represented collagen type 1. ( )

43- Elastic fibers contains periodic striation fibrils aligned in parallel direction. ( )

44- Myosin is represents structured proteins. ( )

45- Enzymes can be demonstrated histochemically in paraffin sections. ( )

46- Fixative can cause changes in the steric configuration of proteins, which may mask antigenic sites. ( )

47- Blocking is essential for preventing non-specific binding of antibodies or other reagents to the tissue. ( )

48- Calcium lipase method is used for the detection of Cholesterol. ( )

49- Stachyose belongs to polysaccharides. ( )

50- Polyclonal antibodies are homogeneous population of Ig directed against a single epitope. ( )

Good Luck

Drs. Hanem Saad Abdel-Tawab & Ahmed Ahmed Raslan

Assiut University

Faculty of Science

Zoology Department

10/6/2022

Course name: Comparative anatomy of vertebrate

Course code: (432-Z)

Time: two hours

Read the question carefully.

Answer the two following questions

Question 1: (Final): Choose the single response that is the correct answer of the following.

1- In mammalian teeth, the enamel layer is produced from

a) Ameloblast
b) Odontoblast
c) Fibroblast

2- The cervical region appears in

a) Only Fish
b) Only bird
c) All tetrapods

3- Basal plate is formed of

a) Trabecula cartilage
b) Parachordal cartilage
c) Polar cartilage

4-The brood patch is……., increasing in the breast of some birds to incubate eggs

a) Blood vessels
b) Contour feather
c) Down feather

5-Which mammalians has mammary gland without nipple?

a) Placental mammals
b) Marsupials
c) Monotremes

6- The vomer bone is in category……. Bone of ……group

a) Replacement- Vault
a) Dermal- Orbital
b) Dermal- palate

7- which of the following not consider of the heart champers ?

a) Conus arteriosus
b) Bulbus cordis
c) Bulbus arteriosus

8- Which of the following does not contain the leydig cells?

a) aquatic larvae of amphibian
b) terrestrial adult of amphibian
c) terrestrial adult of reptilian

9- Crocodiles and some turtles have

a) scent gland
b) Femoral gland
c) Salt gland

10-Which of the following have Metautostylic Jaw suspension?

a) Bird
b) Mammals
c) Fish

11- Embryologically, the splanchnocranium arises from,

a) Endoderm
b) Mesoderm
c) neural crest cells

12- The lower jaw of mammals consists entirely of the.....,which is of ..... origin

a) Dentary bone- dermal
b) Premaxillae and maxillae- dermal
c) Dentary and splenial- replacement

13- The ventricle is completely divided in

a) Mammals, birds, reptiles
b) Bird and lizard
c) Mammals, birds and crocodile

14- The Meibomain glands is located in

a) Eyelids
b) Lips
c) Ear

15- Nasal capsule and trabeculae arise from

a) Endoderm
b) Mesoderm
c) Neural crest

16- The production of vertebra depends on re-segmented

a) halves of two adjacent somites
b) halves of one somites
c) none of All of above

17- .....are the most prominent cell type of the epidermis of mammals

a) Langerhans cells
b) Keratinocytes
c) Merkel cells

18- Which of the following structure is absent in the hair shaft?

a) Hair follicle
b) Hair cuticle
c) Hair cortex

19- Thecodont tooth are prominent in

a) Birds and crocodiles

b) All Reptilian
c) Mammals and crocodiles

20- The skeleton of bird's and reptile's tongue is derived of

a) Mandibular
b) Hyoid arch
c) Branchial arch

21- The vertebral column is differentiated into several regions in

a) Fish
b) Aquatic tetrapod
c) All tetrapod

22- Vault Series runs across the top of the skull includes

a) Frontal, parietal, postparietal
b) Frontal, Nasal, parietal, postparietal
c) Frontal, parietal

23- The dermatocranium is absent in

a) Chondrichthyan and osteichthyes fishes
b) chondrichthyan fishes
c) chondrichthyan and amphibian

24- The most conspicuous component of the dermis of reptiles is composed mostly of

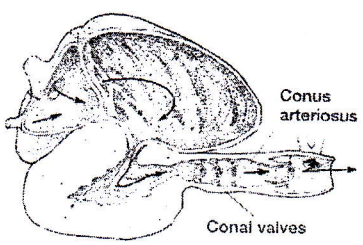
a) Fibrous connective tissue
b) Loose connective tissue
c) Reticular connective tissue fibers

25- pleurocentrum is derived from..... of arcualia

a) Basiodorsal segment
b) Basiventral segment
c) Interventral segment

Question2: (Oral): Choose the definition of the picture +A

(26

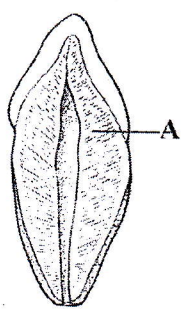


Amphibian heart .A

Lamprey heart .B

Shark heart .C

(27

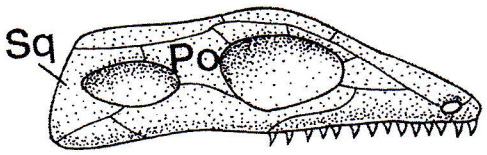


dentin – placoid scale .A

dentin – teeth .B

enamel – teeth .C

(28

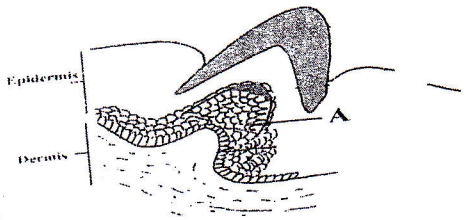


Anapsid skull .A

Synapsid skull .B

Diapsid skull .C

(29

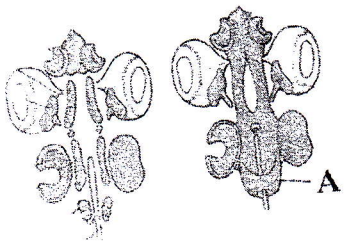


enamel - Horny teeth .A

Replacing teeth – Horny teeth .B

enamel – placoid scale .C

(30



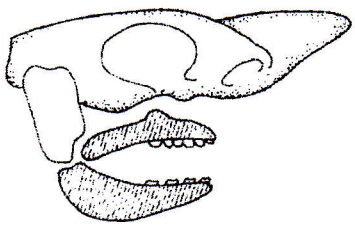
ethmoid plate - development of chondrocrnium .A

basal plate - development of chondrocrnium .B

occipital arch - development of chondrocrnium .C

1

(31



Hyostylic- some bony fish .A

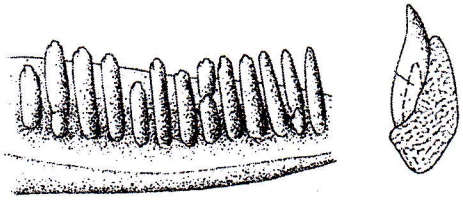
1(Hyostylic- placoderms .B

Hyostylic- sharks .C

17

(32

18-



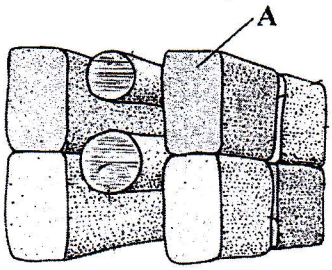
Acrodont- snakes .A

Pleurodont- lizards .B

Thecodont- mammales .C

19-

(33

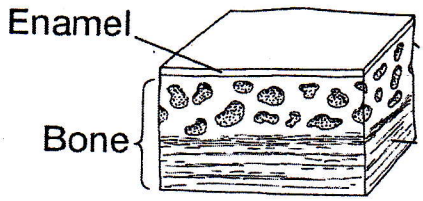


basidorsal cartilage - Arcualia .A

interdorsal cartilage - Arcualia .B

interdorsal cartilage -Arcualia .C

(34

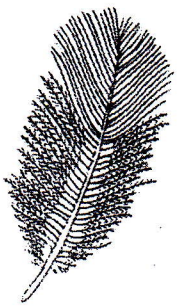


Cycloid scale .A

Cosmoid scale .B

Ganoid scale .C

(35



Down Feather .A

Flight Feather .B

Contour Feather .C

"والله ولي التوفيق"

Faculty of Science
Zoology Department
Selected subjects in zoology(I)
Benthos
Z 401

كلية العلوم- قسم علم الحيوان

أمتحان نهاية الفصل
المقرر: موضوعات مختارة1(القاعيات)
رمز المقرر: 401ح
الزمن: ساعتان
يونية 2022م

Answer the following questions: (50 marks) الأمتحان فى 4 صفحات

I-Choose the correct answer and also write its letter in the answers table below: (26 marks)

1- Physical oceanography includes .....and .....

A) dissolved gases / nutrients
B) salinity / chloronoity.
C) heat transfer / waves
D) all of the above

2- The Deep water mesopelagic ranged between

A) 0-200 m
B) 200-1000 m
C) 100- 2000 m
D) 2000-3000 m

3- Marshes, mangroves and estuaries follows ..... ecosystem.

A) freshwater
B) coastal
C) terrestrial
D) all of the above

4- Class Anthozoa includes

A) corals, sea anemones
B) coral, hydra
C) jellyfishs, sea anemones
D) hydra, jellyfishs

5- One of the following is not related to the others.

A) Exposed rocky shores
B) Sandy shores
C) Boulder beaches
D) Shelterd rocky shores

6- ..... is one of the hard shores.

A) Littoral fringe
B) Sublittoral fringe
C) Exposed rocky
D) Dry sand

7- Sediment-covered shores include:

A) Beaches
B) Salt marshes
C) Mud flats
D) all of the above

8- ..... are organisms swim or crawl through water above the seafloor.

A) Epifauna
B) Infauna
C) Nektobenthos
D) Meiofauna

9- ..... corals don't produce reefs.

A) Ahermatypic
B) Hermatypic
C) Scleractinia
D) Stony

10- Optimal reef development occurs where the mean annual temperatures are about.....

A) 15-20°C
B) 23-25°C
C) 25-35°C
D) 35-40°C

11- ..... are the producers of hydrothermal vent benthic communities

A) Euobacteria
B) Phytobenthoses
C) Chemosynthetic *Archaea*
D) Aquatic algae

12- .....shore is found only where conditions are normally calm and without strong currents.

A) Muddy
B) Littoral fringe
C) Sandy
D) Rocky

13- Coral reefs do not develop in water deeper than about.....

A) 20-30 m
B) 30-50 m
C) 50-70 m
D) 70-90 m

14- Mangrove associated crustaceans include:

A) barnacles, true crabs, and hermit crabs
B) barnacles, true crabs, and ascidians
C) oyster, true crabs, and hermit crabs
D) octopus, true crabs, and sepia

15- One of the following is <u>not</u> related to the others.

A) Fringing reef
B) Barrier reef
C) Soft reef
D) Atoll reef

16- ..... is a marine zone lies below the continental shelf till 1000m depth.

A) Deep sea
B) Archibenthic
C) Abyssalbenthic
D) Bathypelagic

17- .....area occupies the upper parts of sandy shores, and characterizes by dry sand.

A) Littoral fringe
B) Sublittoral
C) Muddy shore
D) Eulittoral

18- ..... is macroalgae contains chlorophyll A & C, fucoxanthin.

A) *Halimeda*
B) *Gracilaria*
C) *Ulva*
D) *Sargassum*

19- In Kelp communities, the macroalgae grow fast, up to .....

A) 5 cm/day **B)** 10 cm/day

C) 50 cm/day **D)** 100 cm/day

20- ..... is on of seagrasses inhabits in the Mediterranean sea.

A) *Halophila ovalis* **B)** *Zostera marina*

C) *Halodule uninervis* **D)** *Thalassodendron ciliatum*

21- ..... are coastal wetlands that are flooded and drained by sea water brought by the tides.

A) Estuaries **B)** Sea wetlands

C) Salt marshes **D)** Aquatic zones

22- Fossiled Foraminifera tests are found in sediments as old as the earliest .....and can still be found in abundance today.

A) Precambrian **B)** Cambrian

C) Terreneuvian **D)** Tonian

23- One of the following is <u>not</u> related to the others.

A) Brown pelican **B)** Snowy plover

C) Bat ray **D)** Great blue heron

24- Benthic foraminifera found at the sea floor, they serve as a food source for.....

A) isopods, true crabs, and hermit crabs **B)** barnacles, true crabs, and ascidians

C) oyster, diatoms, and hermit crabs **D)** isopods, small fish, and marine snails

25- Seagrasses are flowering plants that are adapted to live submerged in the sea water downwards to depth of .....

A) 20_30 m **B)** 50_60 m

C) 70_80 m **D)** 90_100 m

26- ..... are common examples of what you can find in the high tide zone.

A) Chiton, Barancle, Limpet **B)** Chiton, Sea Urchin, Limpet

C) Chiton, Barancle, Moray **D)** Chiton, Barancle, Octopus

Answers table

Question	1	2	3	4	5	6	7	8	9	10	11	12	13
Answer													
Question	14	15	16	17	18	19	20	21	22	23	24	25	26
Answer													

II- **Put true (√) or false (X)for each of the following statements:** **(24 marks)**

( ) 1- Boulder beaches compose of rock platform of different size.

( ) 2- Most of the dominant organisms of the intertidal rocky areas are solitary or colonial animals.

( ) 3- Muddy shores are restricted to intertidal areas completely exposed to wave action.

( ) 4- Rhodophytes have chlorophyll A & C, phycobilins (red pigment).

( ) 5- Most organisms inhabit the marine environment, >98% are benthos!.

( ) 6- Macroalgae play a great role in fixing soft bottom by their complex root system which reduces erosion factors.

( ) 7- During broadcasting sexual reproduction of corals, they release planula larvae.

( ) 8- Dugong and stingray can disturb seagrass meadows while feeding.

( ) 9- Salt marshes protect shorelines from erosion.

( ) 10- Fossil foraminifera can use to recognize changes in water pH.

( ) 11- Most of soft corals have small symbiotic plant cells called zooxanthellae.

( ) 12- The roots of *Avicennia marina* are grey or black, directed upwards.

( ) 13- The Red Sea mangrove includes *Avicennia mucronat* and *Rhizophora marina*.

( ) 14- Coral reefs do occur in regions of elevated salinity 42‰.

( ) 15- The seagrass biomass in mangrove areas are quite low.

( ) 16- Organisms live in spray zone must be able to withstand long arid periods.

أنتهت الأسئلة مع خالص التمنيات بالتوفيق،،،،،،،،،،،،

أ.د. خالد فؤاد عبد الوكيل

K. F. Wakeil

University: Assiut
Faculty: Science
Department: Zoology

Introduction to embryology & evolution
Code: 418 Z
Time: 2 hrs.

Total degree = 50
Final exam. 2022

Note: Questions are in 3 pages

Embryology

I- Choose the correct answer — 10 mark

1- **All these structures are derivatives of the endoderm except**

(a) lung (b) thyroid gland (c) epidermis (d) liver

2- **The skin is derived from the**

(a) Ectoderm (b) mesoderm (c) neural crest (d) ectoderm and mesoderm

3- **The epimere is differentiated into**

(a) dermatome (b) myotome (c) sclerotome (d) all answers.

4- **Detriostomes have ..... cleavage**

(a) radial (b) circular (c) spiral (d) all answers

5- **The allantois grows from the floor of the**

(a) Foregut (b) midgut (c) hindgut (d) all answers.

6- **External fertilization occurs in**

(a) terrestrial animals (b) aquatic animals (c) both (d) Nothing

7- **The chorion is made up of**

(a) ectomesoderm (b) mesoderm (c) endoderm (d) mesoendoderm

8- **Meroblastic cleavage occurs in**

(a) isolecithal eggs (b) mesolecithal eggs (c) polylecithal eggs (d) all answers.

9- **All these classes are amniotic animals except:**

(a) Amphibia (b) Birds (c) Mammals (d) Reptiles

10- **Primary egg membrane is produced by**

(a) follicular cells (b) ovum (c) oviduct (d) all answers

Follow the rest of questions

II- Put False (F) or true (T): (9 mark)

1. Kidney cells have diploid number of chromosomes.
2. Parthenogenesis means the development of the eggs after fertilization.
3. In ovoviviparous animals the developing embryo has no direct contact with mother within placenta.
4. Spermiogenesis is the changes of the primary spermatocytes to sperms.
5. Cleavage in protostomes is determinate.
6. The lining of the alimentary canal arises from the endoderm.
7. Centrolecithal eggs are found in mammals.
8. Dorsal root ganglia of spinal nerves are derivatives of the neural crest
9. In oogenesis the second maturation division occurs before fertilization.

III- Write short notes on two only of the following: (6 Mark)

Illustrates your answers by drawing if possible

1- Different types of the stem cells according to their potentials.
2- Formation of blastula of Amphioxus from fertilized egg.
3- The structure of the sperm.

II. Evolution

Q4: Choose the correct answer: (8 marks)

1- (Inheritance of characters - Natural selection - Mutation) is the mechanism of New Darwinism.

2- The Cambrian explosion revealed (various - similar - no) creatures.

3- (Analogy- Heat retention- Homology) prevents transition from water to land.

4- (Piltdown- Nebraska- Java) man is reconstructed skull with Orangutan's lower jaw!

5- Finches of Galapagos are examples of (evolution – variation - mutation).

6- Haeckel's Tree was based on (sudden – gradual - parallel) origin of species.

7- *Coelacanth* is not the ancestor of land-dwelling creatures but it is a (fish - bird - reptile).

8- (Mutation-Metamorphosis - Natural selection) is a complex preplanning process.

Q5: Answer only three of the following: (9 marks)

1- "Metamorphosis disproves evolution" discuss in details with examples.

2- Explain why cloning and evolution are completely different?

Follow the rest of questions

3- Can mutations produce any kind of evolution? Why?

4- Demonstrate why *Archaeopteryx* couldn't be a transitional form between birds & reptiles.

Q6: Correct over the line: (8 marks)

1- Characters were gained by the environment.

2- Mutations lead to speciation.

3- Finches of Galapagos are examples of microevolution.

4- Populations are different species if gene flow is prevented due to natural selection.

5- Progeria Syndrome occurs because of spontaneous generation.

6- Homology is the reason of bacterial resistance against antibiotics.

7- BURGESS SHALE fossils assure the gradual evolution.

8- Darwin and Wallace thesis was based on cloning technology.

إنتهت الأسئلة بالتوفيق والسداد د. إقبال تادرس و د. هناء عاطف

Assiut University,
Faculty of Science,
Zoology Department,
Zoology Section,

Vertebrate Taxonomy Final Exam
June 2021/2022

Date: 13/06/2022
Time: 2 hour
Level: Fourth
Course Code: 433Z

(ملحوظة: الامتحان في صفحتين)

Answer the following questions with Labeled drawing if they needed

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

1	Craniata have no atrium.	( )
2	The snout region of the skull is not developed in tetrapoda	( )
3	The lower jaw of Amphibia consists of a maximum of six bones	( )
4	The Tuatara has immovable quadrate bone	( )
5	Jacobson's organ is usually well developed in order Squamata	( )
6	The tongue is completely retractile within a sheath in snakes	( )
7	The palate is schizognathous in Caprimulgiformes	( )
8	Apterygiformes have pubic symphysis and ischatic symphysis	( )
9	Well-developed marsupial pouch is present in females of metatheria	( )
10	Dermoptera the only mammals with true flight	( )

2- Mention THREE taxonomic characteristics for FIVE only from the following (10 degree)

1.	Rat-fish	4.	The Sturgeons	7.	Ostrich
2.	Lung-fishes	5.	The gar-pikes		
3.	Bichir	6.	Sauria		

3- Compare between each pair of FIVE only from the following: (10 degree)

1- Hagfishes & Lampreys

2- Chondrichthyes & Osteichthyes

3- The Sharks & Rays

4- Heart and aortic arches of a urodele & an anuran

5- Chelonia & Crocodilia

6- Allotheria & theria

4- Mention the taxonomic characters for FIVE only from the following: (10 degree)

1. Gnathostomata
2. Pisces
3. Apoda
4. Reptilia
5. Aves
6. Mammals

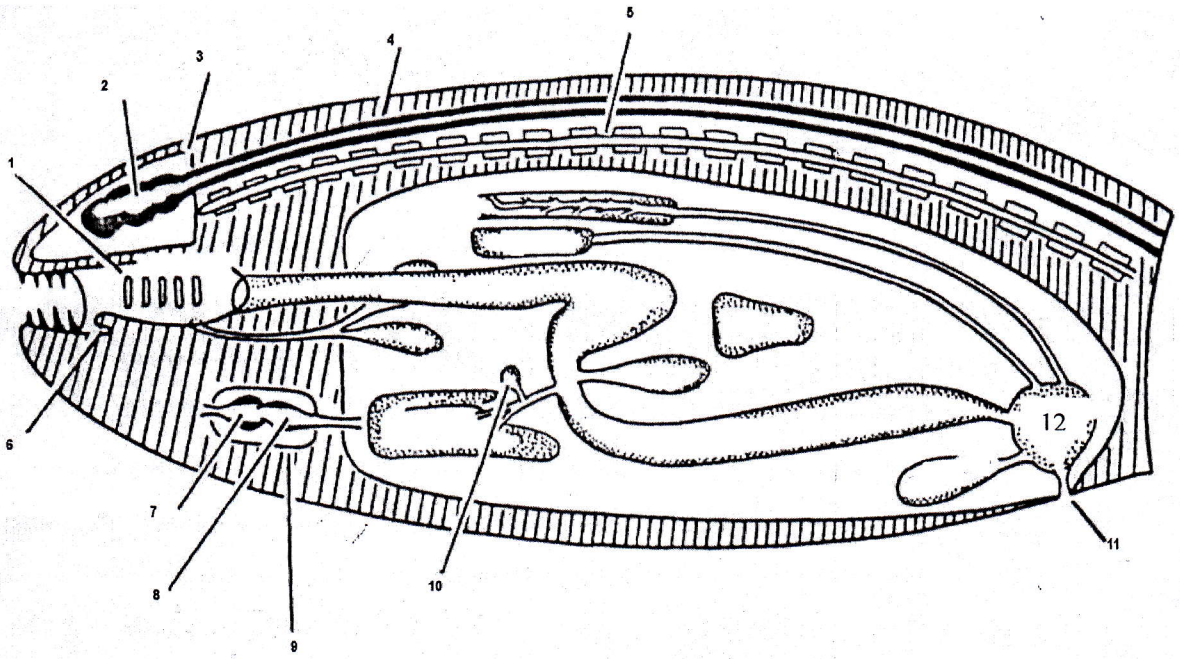
5- Answer TWO only from the following themes: **(5 degree)**

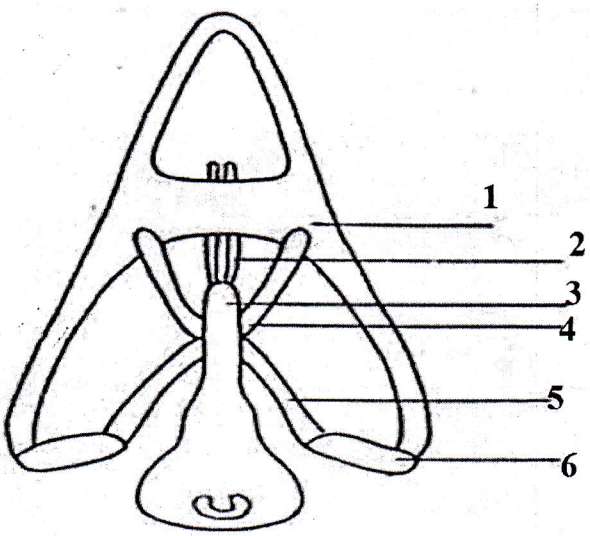
1- Diagrammatically shows arrangement of nesal openings in Crossopterygii.

2- Diagrammatically shows generalized vertebrate brain.

3- Mention the orders of infra-class Eutheria and explain three of them?

6- Define and label each of the following items: **(5 degree)**





Best wishes.....,