



قسم علم الحيوان



جامعة أسيوط .. كلية العلوم

اختبار مادة البيئة المائية ٢٠١٩-٢٠٢٠

الزمن: ساعتان.

أجب عن الأسئلة الآتية:

س ١: اختر الإجابة الصحيحة من بين الأقواس: (5 درجات):

- 1- The biotic factor in the aquatic ecosystem includes (nutrients- chemosynthetic bacteria – waves –heat -all).
- 2-(Euryhaline – Stenohaline – both) are salt tolerant species.
- 3- The marine ecosystem covers about (71% - 97% - 79%) of the earth's surface.
- 4-The freshwater ecosystem generates about (3% - 41%- 14%) of the net primary production.
- 5- (Streams – Lakes – wetlands - all) are classified under lotic waters.
- 6- (The limnetic zone – the littoral zone – the intertidal zone- all) is the open water of the lake.
- 7- (The epilimnion – the metalimnion -- the hypolimnion - The benthic region) is the substrate portion of the lake.
- 8- In lakes; there is rarely any stable vertical stratification of chemical constituents in the (pelagic zone – intertidal zone – littoral zone- thermocline- Epilimnion - hypolimnion - all).
- 9-(Zooplankton – Epibenthos –Infauna – Nekton - all) are the weakly swimming organisms.
- 10-Rivers in semiarid climates tend to have excess (nitrates -- phosphates –all).

أقلب الصفحة من فضلك

س ٢: وضع الرقم المناسب من فقرات العمود (A) أمام ما يناسبه من فقرات العمود (B) (١٥ درجة).

A	B
1- Attenuate floods	+ are provided in lakes by bacterial and fungal decomposition ().
2-Marine ecosystem	+ Are common nutrients needed in large quantities for cell development ().
3-Euryhaline organisms	+ Is the place where the river meets the sea ().
4- Light	+ Have fast unidirectional water flow ().
5-Ponds and Lakes	+ Are stronger swimming organisms ().
6- Biological activity	+ Is the end product of eutrophication ().
7-The intertidal zone	+ Gives a good indication of eutrophication ().
8- Humic acid	+Has an average salinity of 35‰ ().
9-BOD	+ Is one of the functions of aquatic ecosystem ().
10- Detritus	+ are salt tolerant ().
11- Nekton	+ Considered as abiotic characteristic of aquatic ecosystem ().
12-Streams and Rivers	- Considered as lentic waters ().
13- The Estuary	+ Is considered as a factor that determines any aquatic structure ().
14-SiO ₂ -SO ₄ -Fe	+ Is the area between high and low tide ().
15- Acetate and glycolate	+ considered as a refractory compound in natural waters ().

أقلب الصفحة من فضلك

س ٣: أكتب المصطلح العلمي الدال على كل عبارة مما يأتي: (١٥ درجة):-

- 1- An organic compound secreted by some algae and fungi which gives a musty odor to water.
- 2- One of the limiting factors of corals responsible for the absence of reefs in the estuaries.
- 3- A substance secreted by corals which prevent dehydration.
- 4- Vertebrate animals very sensitive for acid rains.
- 5- An organic substance which may be leached from soil as a result of acid rains.
- 6- An area of the lake rich in nutrients.
- 7- A distinct physical structure in streams occurs in flatter portions of the water course.
- 8- A factor which affects the structure of the estuary.
- 9- A type of lakes that has chemical classification depending on microbial processes.
- 10- A group of organisms that live in symbiosis with corals.

س ٤: (١٥ درجة):- عّلل لما يأتي معطيا سببا واحدا لكل حالة:

- 1- There is rarely any stable vertical stratification of chemicals in the littoral zone of aquatic ecosystems.
- 2- Snails are severely affected by acid rains.
- 3- Human impact increases acid rains.
- 4- In some lakes eutrophication does not occur in spite of increasing nutrients.
- 5- Lakes having granite basin are not suitable for fish culture.
- 6- Rivers situated in arid regions have excess phosphate.
- 7- Death of a lot of animals as a result of eutrophication.
- 8- Some lakes are not heavily affected by acid rains.
- 9- Increasing of biodiversity in estuaries.
- 10- Increasing of biodiversity in streams.

With best wishes



Assiut University
Faculty of Science
Zoology Department



Time: 2 hour
Level: three

Course Code: 317Z

First Semester Micro Techniques Exam (29/12/ 2019)

Answer the following questions: (50 marks)

Part: I (25 marks)

1-Choose the correct answer from the followings:- (15 Marks)

- 1- Deformation of alpha helix of protein by (osmium -glutaraldehyde - alchols).
- 2-Copper grids used for (EM –LM- scanning) mounting section.
- 3- Hard at 60C (Epon- paraffin-celloidin).
- 4-Denaturing fixatives Such as (alcohol-osmium- chromic acids).
- 5-Vapor fixation ,the best fixative for (smear - sections – whole mount).
- 6-Best fixation for immunocytochemistry is (formaldehyde-glutaraldehyde-osmium).
- 7-Paraffin sections are (thick-thin &serial - separated).
- 8-Take short time and is economic (paraffin- EM – both) techniques.
- 9- Heavy metals used for staining in (EM - LM - Flourscent Microscope).
- 10- Holding the specimen in place between cover slip and slide (xylol -DPX- formalin).
- 11- Vital stain used for study (in vitro - in vivo- smear)preparation.
- 12- Aqueous mounting medium used for (permanent - temporary – both)preparation.
- 13-Microscopes using visible beams (Polarizing-Ultraviolet- both) microscope.
- 14-Rapid freezing we used (liquid CO2 -formalin - N2).
- 15- Views only the surface as 3 D image (SEM - TEM - phase contrast microscope).

2-Dicscuss the following items Choose 2 only:- (10 Marks)

- 1- Characters of good fixative. (5Marks)
- 2- Advantage and disadvantage of celloidin. (5 Marks)
- 3- Identify the followings. (5 Marks)

Cytological stain – basophilic structures - hydration – auxochrome –fixative.

Part: II (25 marks)

I: Choose the best single correct answer (5 marks)

1-The non-specific sites on the nitrocellulose membrane can be blocked by:

- A). SDS B) Sodium chloride C) Re-hydrated milk D) Dehydrated milk

2-Which of the following is the first step in immunohistochemistry?

- A)Antigen retrieval B)Treating samples with fixative C) Blocking binding sites with low-fat milk
D) Applying the primary antibody.

3- Which technique separates charged particles using electric field?

- A) Hydrolysis B) Electrophoresis C) Protein synthesis D) Protein denaturing

4- is a media that is used in cryopreservation of cells in cell culture techniques.

- A)DMEM B) DEMSO C) Mr Frosty D)Trypsin

5- Why do samples need to be treated with hydrogen peroxide prior to staining with horseradish peroxidase?

- A)To quench endogenous horseradish peroxidase activity B) To activate endogenous horseradish peroxidase
C) To inhibit the applied substrate

II- Write the Scientific name for the following sentences (5 marks)

- 1-Type of cell derived from a primary culture by the selection of cells which having specific properties. ()
2- The strength which the epitope binds to an individual paratope (antigen-binding site) on the antibody. ()
3-Stable enzyme with high specificity and rapid turnover linked secondary antibody which used to produces luminescence. ()
4-The process which does cross link between acrylamide and bis acrylamide to form polyacrylamide gel. ()
5- It is a lower polyacrylamide concentration gel that is placed on top of the more concentrated resolving gel in a PAGE. ()

III-Answer (Three) only of the following (15 marks)

- 1- Why do we use SDS **and** how does SDS PAGE gel work?
2- Write about Steps involved in western blotting **and** write in details about blocking step.
3- What is the principle of immunohistochemistry **and** what the different between monoclonal and polyclonal antibody?
4- **Write about:** cryopreservation, primary culture and Types of cell culture according to anchorage.

Good Luck

Drs. Hanem Saad Abdel-Tawab & Mona M.Atia



I- **Choose the correct answer. (10 marks, one mark for each)**

انقل الجدول الموضح ادناه في كراسة الاجابة واكتب به الحرف الدال على الاجابة الصحيحة

- 1- During hnRNA synthesis,..... unwinds a short stretch of double helical DNA
a- Topoisomerase b- RNA polymerase c- DNA polymerase d- Helicase
- 2- RNA..... in vertebrates makes 18s rRNAs
a- polymerase I b- polymerase II c- polymerase III d- polymerase IV
- 3- During DNA replication in prokaryotes, the enzyme DNA pol Iof the primers
a- Ligates ends b- makes RNA nucleotides c- replaces RNA nucleotides d- replaces DNA nucleotides
- 4- Which of the following represents conserved eukaryotic promoter elements
a- TATA box b- CAAT box c- GC box d- all answers are correct
- 5- Ribosomal genes are an example of
a- Transposons b- high copy number genes c- pseudogenes d- none of the mentioned
- 6- Which of the following enzyme is considered as RNA polymerase
a- DNA ligase b- primase c- helicase d- endonuclease
- 7- Telomeres form a T-loop with some proteins to protect chromosome fromactivity.
a- endonucleases b- exonucleases c- polymerase d- telomerase
- 8- During transcription, preinitiation complex is formed of.....
a- RNA polymerase b- transcription factors c- promoters d- a and b
- 9- Eukaryotic topoisomerase 1b is characterized by....
a- Binds to 3' end and requires MgCl₂ b- binds to 3' end and requires ATP c- binds to 5' ends and does not require ATP d- binds to 3' end and does not require ATP
- 10- Telomerase is a complex enzyme, where..... Bind_(s) to the TTAGGG sequences in the double strand telomeric DNA
a- TRF1 b- TRF2 c- a and b d- TN2 and TPP1

1	2	3	4	5
6	7	8	9	10

II- Put (✓) beside the right sentences and (x) beside the wrong sentences. (10 marks, one mark for each) انقل الجدول الموضح ادناه في كراسة الاجابة واكتب به اجبتك

- 1- Telomere is an example of satellite DNA ()
- 2- Amount of junk DNA increases from lower to higher organisms ()
- 3- During the start of transcription, class II promoters are recognized by RNA polymerase II ()
- 4- Telomerase activity is low in stem cells ()
- 5- RNA polymerase requires DNA primer for working ()
- 6- RNA polymerase assembles ribonucleotides monophosphate into RNA strand ()
- 7- Each amino acid always binds to CCA 3' end of its corresponding tRNA molecule ()
- 8- Bacteria, in general do not have Histone genes ()
- 9- Telomerase is a specialized reverse transcriptase ()
- 10- During the initiation of translation, ATP provides the energy for ribosomal subunits assembly ()

1	2	3	4	5
6	7	8	9	10

III- Write the scientific term(s) that describe the following sentences, (10 marks, one mark for each) انقل الجدول الموضح ادناه في كراسة الاجابة واكتب به اجبتك

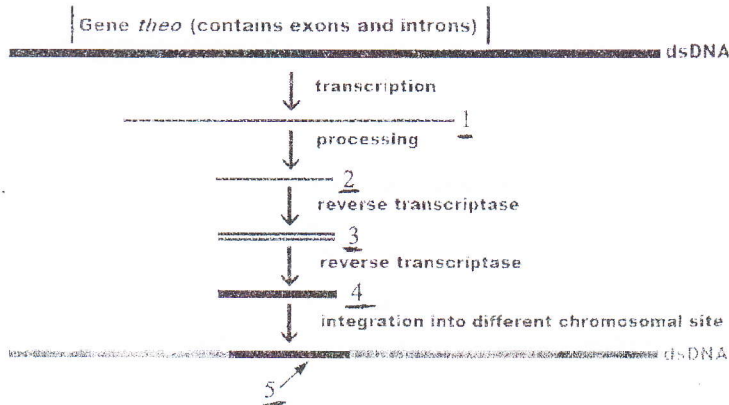
- 1- The ends of the restriction fragments have no complementary overhang.
- 2- A Point mutation where a purine-pyrimidine base pair is exchanged for apyrimidine-purine base pair.
- 3- A type of mutation where base pair substitution results in a stop codon.
- 4- The cellular structure where RNA splicing takes place .
- 5- The RER receptors which recognize and bind to ribosomes.
- 6- The enzyme responsible for protein ubiquitination.
- 7- The molecule which recognizes the signal sequence of the mRNA upon translation on RER.
- 8- The first amino acid of protein synthesis in eukaryotes.
- 9- A sequence in Prokaryotic mRNA shows the ribosomes where to start translating.
- 10- The total numbers of turns of the DNA double helix.

1	2	3	4	5
6	7	8	9	10

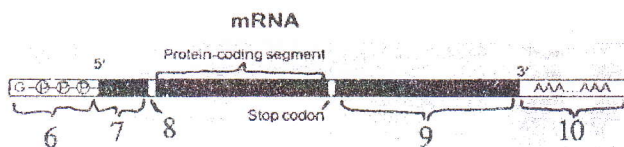
IV- Complete the missing labels of the following diagrams. (10 marks, one mark for each)

انقل الجدول الموضح ادناه في كراسة الإجابة واكتب به اجابتك

processed pseudogene *theoP1*



V-



1	2	3	4	5
6	7	8	9	10

VI- Write short notes about. (10 marks, 5 marks for each)

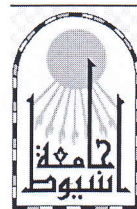
- 1- Different types of Non-coding RNAs (ncRNAs).
- 2- Main types of gene delivery methods.

Best wishes

Course coordinator and Examiner

Abobakr Eltayeb

Prof. Abobakr Eltayeb



I – Put (✓) for the correct sentences and (X) for the wrong ones. (15 marks)

- 1- Formal-calcium is the best fixative for lipids. ()
- 2- Monosaccharides and disaccharides are known as esters. ()
- 3- Fresh frozen sections are preferred for detection of lipids. ()
- 4- Basophilia is the only method used for DNA detection. ()
- 5- A nucleotide is formed of pentose, phosphoric acid and a base. ()
- 6- Sudan black B is an excellent stain for phospholipids. ()
- 7- Best's carmine is useful for glycogen demonstration. ()
- 8- Classical embedding techniques are recommended for enzymes. ()
- 9- Elastin from fibrous proteins. ()
- 10- The enzyme is highly labile and quickly disappears from the tissue. ()
- 11- Nucleic acids are polymers of nucleotides. ()
- 12- When glucose and fructose are linked together they form maltose. ()
- 13- The pyrimidine bases include thymine, uracil and cytosine. ()
- 14- Staining reactions for proteins depend on their amino acid composition. ()
- 15- Polysaccharides are formed by polymerization of 3-9 monosaccharides. ()

II – Choose the correct answer: (15 marks)

- 1- are esters of fatty acids with long chained alcohol. (waxes – sugars – lipids)
- 2- is the method by which the sites and amounts of radioactivity in tissues are determined. (Metachromasia – Autoradiography – Staining)
- 3-microscopy is used to identify crystalline cholesterol and cholesterol esters. (Fluorescence – Scanning – Polarizing)
- 4-proteins are nucleoproteins, glycoproteins, chromoproteins and lipoproteins. (Simple – Fibrous – Conjugated)

- 5- Free fatty acids are demonstrated by forming with some metals.
(soap – color – radiation)
- 6- Are chains of more than nine monosaccharides.
(Oligosaccharides – Polysaccharides – waxes)
- 7- Ultraviolet oxidizes the unsaturated lipids giving an which is demonstrated by Schiff's reagent.
(alcohol –aldehyde –ester)
- 8- Special Are linked to lipids and proteins in the plasma membrane forming glycolipids and glycoproteins. (polysaccharides – oligosaccharides – enzymes)
- 9- Purine bases are heterocyclic rings. (one – two- three)
- 10- When two monosaccharides are linked together they form.....
(oligosaccharides – disaccharides – polysaccharides)
- 11- Purines and pyrimidines (bases) can be demonstrated only by
(UV absorption method – PAS reaction – Electron microscopy)
- 12- Group of compounds having the general formula $(CH_2O)_n$
(carbohydrates – lipids – proteins)
- 13- Proteins are albumins, globulins and fibrous proteins.
(Conjugated – Simple – Compound)
- 14- are usually named after their biochemical reaction with the addition of the suffix – “ase”.
(Lipids – enzymes – proteins)
- 15-used for demonstration of fibrous proteins.
(Trichrome stain – PAS reaction – H & E)

III – Write on 4 only of the following :

(20 marks)

- a- Types of techniques used in enzyme histochemistry.
- b- Classification of polysaccharides.
- c- Metachromasia: definition, mechanism and condition of staining.
- d- Methods for preparing autoradiographs.
- e- Periodic acid Schiff's (PAS) method.

With my best wishes

Dr. Alshaimaa Ahmed Alghriany



Assiut University Faculty of Science Zoology Department	Final Exam of Principles of Embryology (Z334) For Chemistry-Zoology Students	Jan., 22 nd 2020 Time: Two hours Total marks: 50
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Answer the following questions using labeled drawings when it is possible:

- 1- A) Compare between the blastulae of *Amphioxus* and toad. (5 marks)
B) Account the different types of ova giving example for each. (3 marks)
- 2- A) Show with labeled drawings only the structure of: (a) sperm (b) chick egg (6 marks)
B) Show with labeled drawings only differentiation of mesodermal somite in *Amphioxus* and toad. (4 marks)
- 3- State true or false: (5 marks)
 - i- Chordamesoderm is located at the roof of archenteron.
 - ii- Distal centriole functions for the union of male and female nuclei.
 - iii- Fertilization cone helps to prevent entry of new sperms into the ovum.
 - iv- The value of pH is not important factor during fertilization.
 - v- Type of cleavage in chick embryo is superficial meroblastic one.
- 4- Discuss briefly the scientific bases of contraceptive methods. (10 marks)
- 5- A) Explain the development of different types of kidneys. (10 marks)
B) Write on the hormonal control of spermatogenesis. (5 marks)

End of questions.....Best of Luck

Dr. Reda A. Ali
Prof. Experimental Embryology

Assiut University
Faculty of Science
Zoology Department



Final examination
Course number 321Z
(Parasitology)
Time: 2 hours

January 2020

Answer the following question (Write the answer only in your paper)
A- Fill in the blanks: (14 marks)

- 1- The final host of *Echinococcus granulosus* isbut the intermediate host is/..
- 2- The first intermediate host of *Heterophyes heterophyes* is and that of *Diphyllbothrium latum* is
- 3- Erratic parasites those which are means.....but Incidental parasites, those which are means.....
- 4- Adult worms of *Onchocerca volvulus* occur in.....they transmitted by.....and their adult female laying larvae termed.....
- 5- The intermediate host of *Schistosoma haematobium* is..... whereas in *Schistosoma mansoni* is.....
- 6- *Trichomonas tenax* lives in.....and *Entamoeba gingivalis* lives inthey feeding on.....

B- Choose the one correct answer: (6 marks)

- 1- The second intermediate host of *Diphyllbothrium latum* is (Cyclops- cattle- Sheeps -frogs –none of them)
- 2- Diurnal periodicity is seen in larvae of (*Wuchereria bancrofti* – *Loa loa* –*Onchocerca volvulus* – none of them)
- 3- The infective stage of pathogenic free-living, *Acanthamoeba* is (trophozoite-cyst – all of them)
- 4- Female Anopheles mosquito is insect vectors of (*Entamoeba histolytica*, *E. coli* - *Plasmodium falciparum*-*Balntidium coli* –none of them)
- 5- The infective stage of *Trichomonas vaginalis* is (mature cyst- Quadrinucleated cyst-Eight-nucleated cyst, - none of them)
- 6- The insect vector of *Trypanosoma cruzi* is (mosquito- house fly- sand fly- none of them)

انظر خلفه

C- Put a suitable(✓) or (X) adjacent to the following: (10 marks)

- 1- Trophozoites occurs only as amoeboid forms, there is no flagellate stage in the pathogenic free-living amoeba, *Naegleria* species ()
- 2-Infective stage of *Fasciolopsis buski* is cercariae ()
- 3-*Clonorchis sinensis* lives in human intestine ()
- 4-Fertilization of male and females gametes of *Plasmodium* sp. occurs in human blood ()
- 5-Infection of *fasciola gigantica* occurs through ingestion of metacercariae in contaminated undercooked fish. ()
- 6-Furcocercous cercariae may have both penetration &cystogenous glands ()
- 7- The infective stage of *Balantidium coli* is trophozoite ()
- 8- Cercaria is the end stage of asexual reproduction of flukes ()
- 9-Final host is the host harbouring sexual forms of Protozoa ()
- 10- Plerocercoid is a larvae of Pseudophyllidean tapeworms ()

D- Answer the four only of the following questions. (20 marks)
(illustrating your answer with labeled drawings whenever possible)

1-Write briefly on: a- Sources of parasitic infection.
b- types of eggs in *Ascaris*.

2-Write Short notes on: a- Morphological forms of *Leishmania* species.
b- *Toxoplasma gondii*.

3- Name the helminthes that do not require any intermediate host and describe briefly life cycle of one of them.

4- Enumerate the protozoan parasites transmitted to man by arthropods. Mention the infective stage and habitat of one of them.

5- In a table form, differentiate between *Taenia saginata* and *Taenia solium* in the following items: Scolices –gravid segment- infective stage - intermediate host- definitive host.

.....

Good luck

Prof. dr., Gamal H. Abed



50 marks; questions are on two pages.

Answer the following questions:

Q1: Choose the correct answer from those given in brackets: (14 marks)

- 1) The secretion of Montgomery 's gland is a human (primer pheromone – releaser pheromone – modulator pheromone).
- 2) Ethology focuses on the study of animal behavior (in natural habitats – under experimental settings – during day time).
- 3) The odor of green plant leaves can be used as a conditioned stimulus for (cows – rabbits – dogs).
- 4) When a vomeronasal organ is destroyed in mice, their response to pheromones (increases – decreases – does not change).
- 5) Singing behavior in songbirds is (learned – instinctive – not successful).
- 6) When you see a domestic dog opening a house door using its right front leg, you conclude that its behavior is (imitation – emulation – rational imitation).
- 7) The (trail pheromone – marking pheromone – sex pheromone) is an example of messages that can be read in the absence of sender.
- 8) The urine of mice contains (primer pheromones – releaser pheromones – synomones).
- 9) Sound communication in chimpanzees is not well developed because they have a poor (perception of voices – sound producing system – hearing center in the brain).
- 10) One of the factors that suggest the presence of human pheromones is the (copious secretions of sweat – presence of vestigial vomeronasal organ – absence of accessory olfactory bulb).
- 11) The neural mechanisms of habituation in humans and *Aplysia* are (the same – slightly different – completely different).
- 12) Most innate patterns of behavior are (intelligent – acquired – adaptive).
- 13) The (Wada test – mirror test – Weber's law) is used to examine self-recognition ability in animals.
- 14) To humans, an odor of smoke coming from the kitchen is (a supernormal releaser – a normal releaser – an alarming pheromone).

The remaining questions are on the back of this page >>

<< Continued from the previous page

Q2. Answer four only of the following:

(18 marks)

- a) Write an account on imprinting and its features.
- b) Illustrate how some birds are able to count.
- c) The digger wasp female may examine her nest every time her captured prey is moved. Do you think this behavior is adaptive? Give the reasons.
- d) Explain how ethological factors can be used to improve the animal learning.
- e) Discuss the relationship between Gestalt theory and the animals' ability to solve problems.

Q3. Answer four only of the following:

(18 marks)

- a) Classify the allelochemicals, showing their role as means of communication.
- b) Write an account on imitation and context learning in animals.
- c) Compare between Vanderbergh effect and Clever Hans effect.
- d) Give an example indicating that some animal species have a language.
- e) Explain the similarities between humans and animals in the way they process numbers.

_____ End of questions _____

Good luck

Examiner: Prof. Dr. Medhat M. Sadek



Assiut University
Faculty of Science
Zoology Department



Third year Exam (Zoology)

Course name: Vertebrate 2

Course code: (330-Z)

Time: two hours

Answer the four following questions

Question 1: Read the following 20 sentences carefully, put (√) or (×) and rewrite the incorrect sentence correctly in the space below. (20 pt)

1. Amniota includes; Amphibia, Reptilia, Aves and Mammalia.
2. The stem of reptiles Archaeopteryx.
3. All reptiles have diaphragm.
4. The Crocodile excretes ammonia.

5. Keratinization associated with the terrestrial life.

6. Amniotic vertebrates are characterized by mesonephric kidneys.

7. Voluminous of the avian brain due to the development of the hind brain.

8. Synapsidian skull has no fenestra in its temporal region.

9. Accessory cranial nerves in amniotes are spinal accessory and fascial.

10. Water retention for reptiles has been done by the intestine.

16. Snake swallow big prey because its skull is monemostylic type.

17. The only unique character of mammals is the hair cover.

18. The embryo of marsupialia communicates with mother through the
umbilicus.

19. All mammals have seven cervical vertebrae.

20. Amniota are ectothermic.

11. Lepidosauria includes Lizards, Snakes, and Amphisbanians.

12. Reptilian jaw bears epidermal teeth.

13. All birds feed their young milk secretion.

14. The sinus venous is incorporated in the right auricle of the reptilian heart.

15. Separation of oxygenated and non-oxygenated blood in Amphibian heart has been done by the presence of the spiral valve in trunkus arterious.

Question 2: Compare between the following: (10 pt.)

- A. The arterial aortic arches of reptile and bird.
- B. The lower jaw of reptile and mammal.

Question 3: Illustrate the mechanoreceptor among the amniotic vertebrate. (10 pt.)

Question 4: Describe the structure of two of the following: (10pt.)

- A. The middle ear in mammals.
- B. Avian air sacs.
- C. The embryonic membranes.