

Assiut University, Faculty of Science

Zoology Dept.

Zool & Zool-chem programs

Time allowed: 2hr



final exam, 03-01-2019

1st semester, 2018- 2019

Molecular biology (311 Z)

50 marks

(The exam is in three pages)

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

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

- 1- In transcription,..... unwinds a short stretch of double helical DNA
a- Helicase b- DNA polymerase c- RNA polymerase d- Topoisomerase
- 2- RNA..... in Eukaryotes makes mRNAs
a- polymerase I b- polymerase II c- polymerase III d- polymerase IV
- 3- Production of different proteins out of the same gene is known as.....
a- Translation b- splicing c- alternative splicing d- post-transcriptional modification
- 4- DNA replication in prokaryotes, the enzyme degrades the primers
a- Polymerase I b- Polymerase II c- Polymerase III d- primase
- 5- Telomere structure protects DNA fromactivity.
a- endonuclease b- exonuclease c- polymerase d- telomerase
- 6- The name of the DNA nucleoside containing Cytosine base.....
a- Cytosine b- deoxycytosine c- Cytidine -5' monophosphate d- deoxycytidine
- 7- Which of the following represents conserved eukaryotic promoter elements
a- TATA box b- GCCA box c- CA box d- all answers are correct
- 8- are an example of high copy number genes.
a- Transposons b- ribosomal genes c- pseudogenes d- none of the mentioned
- 9- Primase is belonging to.....
a- DNA polymerases b- RNA polymerases c- helicases d- exonucleases
- 10- Indels mutations which are not divisible by 3 result in translation of incorrect amino acids, stops codons or read-through of stop codons
a- missense mutations b- neutral mutations c- silent mutations d- frame shift mutations

1	2	3	4	5
6	7	8	9	10

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

- 1- The length of the conserved genes decreases from lower to higher organisms ()
- 2- Number of genes per million base pairs (Mb) in Human is bigger than that of bacteria ()
- 3- Amount of junk DNA increases from lower to higher organisms ()
- 4- Centromere does not contain satellite DNA ()
- 5- DNA replication process gets energy from deoxyribonucleoside triphosphates ()
- 6- MicroRNA (miRNA) is a non coding RNA ()
- 7- Introns are not transcribed into precursor mRNA ()
- 8- Reverse transcriptase is not engaged in pseudogenes processing ()
- 9- Transcription factors are DNA sequence found near the start of transcription ()
- 10- Bacteria have Histone genes ()

1	2	3	4	5
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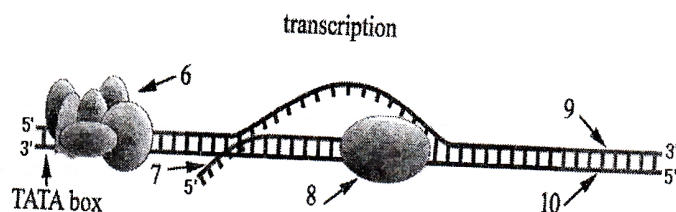
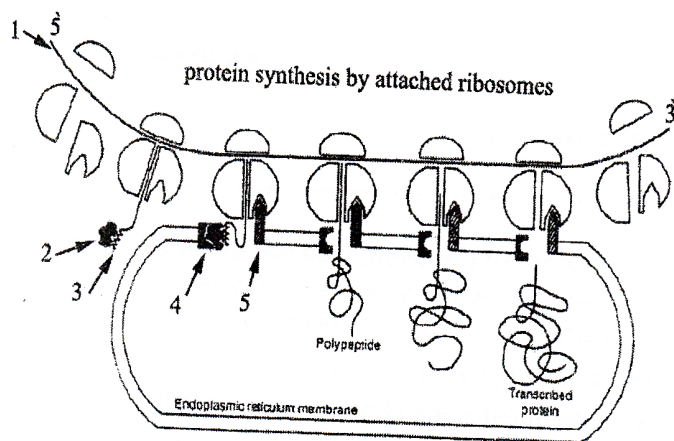
III- Write the scientific term(s) that summarize the following sentences, (10 marks, one mark for each) *انقل الجدول الموضح ادناه في كراسة الاجابة واكتب فيه الاجابة الصحيحة*

- 1- A mobile genetic element that can change its location in the genome.
- 2- Sequences of DNA that are related to known genes but no longer possess the ability to code for a protein.
- 3- Enzymes recognize short DNA sequences (4 or 6 bp) and cut both strands of DNA at those sequences.
- 4- The ends of the restriction fragments which are complementary.
- 5- The number of times a particular mutation occurs in a population of cells or individuals.
- 6- Point mutation where a purine-pyrimidine base pair is exchanged for the other purine-pyrimidine base pair.
- 7- A cellular structure responsible for the degradation of proteins marked with ubiquitin.
- 8- Six proteins complex found in mammalian telomerase.
- 9- The DNA sequence from the start codon to the stop codon.
- 10- A type of mutation where base pair substitution results in a stop codon.

1	2	3	4	5
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IV- Complete the missing labels of the following diagrams. (10 marks, one mark for each)

انقل الجدول الموضح ادناه في كراسة الاجابة واكتب فيه الاجابة الصحيحة



1	2	3	4	5
6	7	8	9	10

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

- 1- Difference between eukaryotic and prokaryotic gene expression (mention only five differences)
- 2- Pre-mRNA processing

Best wishes

Course coordinator and Examiner

Prof. Abo bakr Eltayeb



جامعة أسيوط - كلية العلوم

قسم علم الحيوان

اختبار مادة البيئة المائية ٢٠١٨-٢٠١٩

الزمن: ساعتان.

أجب عن الأسئلة الآتية:

س ١: اختر الإجابة الصحيحة من بين الأقواس: (١٠ درجات):

- 1- One of the functions of aquatic ecosystem is (purify air – attenuate floods-both)
- 2-Nutrients and dissolved oxygen in aquatic habitat can be considered as (abiotic characteristics- chemical factor- both).
- 3- The autotrophic organisms in aquatic habitat include (algae-bacteria-both).
- 4-Heterotrophic organisms in aquatic habitat include (stenohaline – algae -both).
- 5-Organisms found in marine habitat include (brown algae- cephalopods-both).
- 6- The first step in eutrophication of aquatic ecosystem is (the increasing of minerals like phosphate and nitrite- algal bloom- formation of detritus).
- 7- A high BOD means (less of organic materials- lots of organic material- both).
- 8- The benthic organisms include (epibenthic – infauna – both).
- 9- Horizontal meanders in rivers occur in (high portions- flatter portion- both).
- 10-Optimal reef development occurs where the mean annual temperature is about (32:35- 30:35- 23:25).

س٢: ضع الرقم المناسب من فقرات العمود (A) أمام ما يناسبه من فقرات العمود
(B) (١٥ درجة):-

A	B
1- Recycling of nutrients	+ Acts as toxicants or as growth stimulators ().
2-Marine ecosystem	+ Are common nutrients needed in large quantities for cell development ().
3- The profundal zone	+ Are important nursery areas for fish and birds ().
4- Freshwater ecosystem	+ Have swift unidirectional water flow ().
5-Lentic water	+ Are stronger swimming animals ().
6- Biological interactions	+ It means the increase of organic material in aquatic habitat ().
7-The pelagic zone	+ Measures the rate of oxygen consumption by a sample of water ().
8- Humic acid	+Generates 32% of the world's net primary production ().
9-BOD	+ Is one of the functions of aquatic ecosystem ().
10- Eutrophication	+ Is the bottom or deep water ().
11- Nekton	+ Generates nearly 3% of the world's net primary production ().
12-Streams and Rivers	+ Is the slow moving water ().
13- Estuaries	+ Is considered as one factor that determines any aquatic structure ().
14- CO ₂ - NO ₃ - SIO ₂	+ Is the open water of the lake ().
15- Cu- Zn	+ Belongs to the refractory compounds in natural waters ().

س ٣: أكتب المصطلح العلمى الدال على كل عبارة مما يأتى: (١٥ درجة):-

- 1- A substance –comes from volcanic vents- and can be eaten by chemosynthetic bacteria in benthic marine ecosystem
- 2- Salt tolerant organisms.
- 3- A marine area located between high and low tide.
- 4- The areas where the soil is saturated or inundated for at least part of the time.
- 5- The middle portion of the lake where the rate of temperature change with depth is the greatest.
- 6- Floating or weakly swimming animals.
- 7- Organisms which burrow beneath the mud surface.
- 8- Compounds which change the ionic state of metals that otherwise be toxic.
- 9- The chemical material used by plants and animals that inhibit the growth of their competitors.
- 10- One of the limiting factors of corals responsible for renewing plankton and provides corals with fresh oxygen.

س ٤: (٥ درجات):-

أكتب الكلمة أو الكلمات الناقصة فيما يلى:

- 1-is an ecosystem located in water bodies.
- 2- 85% of the dissolved materials in sea water are..... and
- 3- The.....zone is the relatively shallow part of the ocean that lies over the continental shelf.
- 4-has an adverse effect on corals.
- 5- One of the importance of corals is:.....

س ٥:

ماذا تتوقع فى الحالات الآتية: (٥ درجات):-

- 1- Increasing of acid rains at certain aquatic habitat.
- 2- Reducing of the coral reefs in The Red sea.
- 3- Collecting all algae and plants in an aquatic habitat.
- 4- Increasing turbidity of water in the Red Sea.
- 5- Adding sewage water to the River Nile.

With best wishes



جامعة أسيوط - كلية العلوم

قسم علم الحيوان

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With best wishes



Assiut University
Faculty of Science
Zoology Department



Course name: Vertebrate 2

Course code: (330-Z)

Time: 2 hours

9-1-2019

Answer the four following questions

**(Illustrate your answer on questions no. 3&4 by
clear drawing**

Question 1: Fill the spaces, no commentary needed (15 pt.)

- 1- Amniotic vertebrates include class:.....
.....
- 2- The difficulties faced terrestrial vertebrates on land are;.....
.....
- 3- Reptiles arethermic, while birds and mammals are.....
- 4- Olfactory nerve is, the oculomotor is
while the trigeminal is
- 5- Flightless birds are characterized by;.....
.....

**Question 2: Choose the single response that is the correct answer of
the following.** (20 pt.)

1. Stem of terrestrial vertebrates is
 - a) Lung fish
 - b) Osteichthyes

c) Sarcopteregian

d) Acanthodii

2. Terrestrial vertebrates face the force gravity by development of

a) Neck region

b) Vertebral column

c) Tetrapod limb

d) Keratinized structures

3. Stem of Amniota

a) Captorhinomorpha

b) Archaeopteryx

c) Salposcutus

4. Head of Amniota is carried off the ground by

a) Skull

b) Tetrapod limb

c) Developed neck

d) Trunk region

5. Reptiles breath by

a) Positive pressure pumping

b) Aspiration

c) Air sacs pumping

d) Passive pressure

6. Sensory nerves in Amniotes are

a) All cranial nerves

b) I, II and VII

c) III, IV and V

d) The last cranial nerves

7. Panizza foramen exit in interventricular septum of.....heart

a) All terrestrial vertebrates

b) All Reptilian

- c) Crocodilian
- d) Crocodilian and Lizards

8. Snakes swallow big prey because

- a) Its big mouth
- b) Its monimostylic skull
- c) Have strong jaw musculature
- d) Its streptostylic skull

9. Diaphragm exist in

- a) All Reptiles and Amphibia
- b) All Amniotes
- c) Mammals and Crocodiles

10. Lung with saccular pumping region exists in

- a) All amniotes
- b) All reptiles
- c) All reptiles and birds

11. Trunkus arteriosus with spiral valve associated with the heart of

.....

- a) Birds and Reptiles
- b) Amphibian and birds
- c) Amphibian

12. The main mechanoreceptor is the

- a) Tympanic membrane
- b) Outer ear
- c) Lateral line
- d) Inner ear

13. Synsacrum is

- a) Fusion of trunk vertebrae
- b) Constant structure of vertebrates
- c) Fusion of sacral vertebrae with pelvic girdle in birds

- 14. Avian exhalent sacs are**
- a) Interclavicular and abdominal
 - b) Thoracic and cervical
 - c) The cervical, interclavicular and anterior thoracic sacs
- 15. Which of the following is not found in birds**
- a) Feather
 - b) Developed pectoral muscles
 - c) Uropygial glands
 - d) Sweat glands
- 16. Birds feed their young by milk within order**
- a) Charadriiformes
 - b) Columbiformes
 - c) Falconiformes
 - d) Passeriformes
- 17. Synapsidian skull posses**
- a) An upper temporal fossa
 - b) An upper and lower temporal fossae
 - c) A lower temporal fossa
- 18. Group of mammals has Reptilian characters**
- a) Euotheria
 - b) Prototheria
 - c) Metatheria
- 19. Head rotation allows by**
- a) A cervical muscular system
 - b) Development of anterior cervical vertebrae
 - c) Development of the neck region
- 20. Platypus is within**
- a) Eutheria
 - b) Prototheria

c) Metatheria

Question 3:

(5 pt.)

- Compare between the following structures:
Amphibian and Reptilian heart, and the aortic arch diverge from.

Question 4:

(10 pt.)

- Discuss three items only from the following
 - a) Amniotic membranes
 - b) Avian brain
 - c) The spinal nerve and its relationships with the sympathetic system
 - d) The middle ear in terrestrial vertebrates

"والله ولي التوفيق"



1-Choose the correct answer from the followings:-

- 1-After section cutting we put the slides directly on (oven –hot plat).
- 2- Filtration of wax to remove (fine dust – crystals- xylol).
- 3-Celloidion techniques is good for (CNS-skin –nothing).
- 4-Alcohol is miscible with (wax- xylol- wax &xylol).
- 5-Glutaraldehyde used for fixation must be (cold-hot –in between).
- 6- Deformation of alpha helix of protein by (osmium-glutaraldehyde-formalin).
- 7-Grids of EM made from (steel- glass - copper).
- 8-Epon is liquid at (Rt-oven -60C).
- 9- Wax must be cleared from (clearing agent-alcohols- water).
- 10-Denaturing agents Such as (methyl alcohol-picric acid- formalin).
- 11-The best fixative for smear (vapor – paraffin techniques- both).
- 12-Best fixation for immunocytochemistry is (formaldehyde-glutaraldehyde-osmium).
- 13-To minimize the crystallization of wax must be (slow cooling-rapid cooling- Rt).
- 14-Mounting media have the (same - different-colored) refractive index of glass slides.
- 15-The interior of EM is filled with (air field-vacuum- both).
- 16-Celloidion sections are (thick-thin- separated) from each others.
- 17-Maximum magnification in LM is (X200 -X400 -X1000).
- 18-(Healthy- not good) to wear mask during preparation of chemicals for tissue processing.
- 19-Take long time and is expensive (paraffin- EM – both) techniques.
- 20- Irritation of eye and upper respiratory tract caused by (formalin- alcohols-haematoxylin).
- 21- Staining for EM by (osmium-heavy metals-haematoxylin).

2-Put True (T) or False (F) and correct the false ones

(15Marks)

- 1-Melting point of soft wax is 50C.
- 2-Aqueous mounting medium used for permanent preparation.
- 3- Xylol holding the specimen in place between cover slip and slide.
- 4- Permanent preparation completed by resinous mounting media.
- 5-Cationic stain is positively charged.
- 6-Eosin is anionic stain.
- 7-Microtome is used in staining sections.
- 8- Vital stain used in vitro preparation.
- 9- Fixation rate is increased by upgrade in temperature.
- 10-Benzen is healthy in histological techniques.

3-Discuss the following items

(25 Marks)

- 1- Criteria of good mounting media. (5Marks)
- 2- Factors affecting in stain. (5Marks)
- 3- Advantage of paraffin techniques (5 Marks)
- 4- Compare between LM&EM. (5Marks)
- 5- Identify the followings. (5 Marks)

Fixative –supravital stain - metachromasia-orthochromasia – types of microtome

Good Luck

Dr. Hanem Saad Abdel-TAwab



Maximum: 50 marks; the questions are on two pages.

Answer the following questions:

Q1: Choose the correct answer from those given in brackets:

(10 marks)

- 1) When a police dog is trained to distinguish the odor of explosives, this odor is considered (unconditioned stimulus – conditioned stimulus – supernormal releaser).
- 2) Similarity between humans and animals in their arithmetic ability is represented by the fact that both (are able to solve complex mathematical problems – follow Weber's law upon comparing quantities – have different areas in brain to control mathematics).
- 3) Whitten effect arises as a result of exposure to (releaser pheromone – primer pheromone – allomone).
- 4) One of the confirmed discoveries regarding the human pheromones is that mate preference is affected by (fluctuating asymmetry – waist-to-hip ratio – major histocompatibility complex).
- 5) The unintentional communication between researchers and their animal models is known as (Lee-Boot effect – Bruce effect – Clever-Hans effect).
- 6) When a domestic cat opens a door using its mouth, this means that it is most probably performing (imitation – emulation – imprinting).
- 7) The (trail pheromone – aggregation pheromone – alarm pheromone) is an example of a message that can be read in the absence of sender.
- 8) Chimpanzees cannot speak because they (do not understand spoken language – do not have a good vocal system – do not learn quickly).
- 9) The hygienic behavior of honeybee workers is (entirely inherited – never inherited – partially inherited and partially acquired).
- 10) Habituation is common in (many animal species – a few animal species – only birds and mammals).

Q2. Answer four only of the following:

(20 marks)

- a) Explain classical conditioning in animals and mention why it is considered an associative type of learning.
- b) Describe how a female human pheromone can affect another female.
- c) Summarize the characters of innate behavior.
- d) Compare between normal releaser and supernormal releaser, giving an example of each.
- e) Illustrate how and why the "mirror test" is carried out and mention the animal species that could pass it.

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

<< Continued from the previous page

Q3. Write an account on four only of the following:

(20 marks)

- a) Pattern recognition in animals.
- b) The differences between kairomones and synomones, giving an example on each.
- c) Sources of doubt and sources of support regarding the existence of human pheromones.
- d) The utilization of ethological factors to enhance learning by operant conditioning.
- e) The three schools of animal behavior, and the main differences between them.

End of questions

Good luck

Examiner: Prof. Dr. Medhat M. Sadek

Assiut University
Faculty of Science
Zoology Department



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

January 2019

Answer the following question (Write the answer only in your paper)

A- Fill in the blanks: (12 marks)

- 1- The final host of *Toxoplasma gondii* isbut the intermediate host is
- 2- The first intermediate host of *Paragonimus westermani* is and that of *Diphylllobothrium latum* is
- 3- The infective stage of pathogenic free-living amoebae, *Naegleria fowleri* is.....
- 4- The biological intimate associations of organisms may be symbiosis, which means.....and parasitism, which means.....
- 5- Adult worms of *Wuchereria bancrofti* occur inthey transmitted by.....and their adult female laying larvae termed.....
- 6- The infective stage of *Plasmodium* sp. is and that of *Trypanosoma* sp. is

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

- 1- The second intermediate host of *Paragonimus westermani* is (Cyclops- cattle- Sheeps -frogs -none of them)
- 2- *Heterophyes heterophyes*, to complete its life cycle requires (one host- two hosts- three hosts - none of them)
- 3- The insect vector of *Trypanosoma gambiense* is (*Anopheles* mosquito- house fly- sand fly- *Pulex irritans*- none of them)
- 4- Man acts as a intermediate host in (*Taenia saginata* -*Clonorchis sinensis* *Dipylidium caninum* - Cysticercosis - none of them)
- 5- Diurnal periodicity is seen in larvae of (*Wuchereria bancrofti* - *Loa loa* -*Onchocerca volvulus* - none of them)
- 6- The infective stage of pathogenic free-living, *Acanthamoeba* is (trophozoite- cyst - all of them)

----- انظر خلفه -----

C- Put a suitable(✓) or (X) adjacent to the following: (12 marks)

- 1-Infective stage of *Fasciolopsis buski* is cercariae ()
- 2-*Clonorchis sinensis* lives in human intestine ()
- 3-The insect vector of *leishmania* sp., is house fly ()
- 4-Fertilization of male and females gametes of *Plasmodium* sp. occurs in human blood ()
- 5-Deer fly is insect vectors of *Wuchereria bancrofti* ()
- 6-Infection of *fasciola hepatica* occurs through ingestion of metacercariae in contaminated undercooked fish. ()
- 7-Leptocercous cercariae may have both penetration &cystogenous glands ()
- 8- The infective stage of *Giardia lamblia* is trophozoite ()
- 9-Intermediate host is the host harbouring sexual forms of Protozoa ()
- 10-Oncosphere is the egg-encased embryo of cyclophyllidean Tapeworms. ()
- 11-Costa is a cytoplasmic structure seen at the base of undulating membrane of intestinal flagellates. ()
- 12-The infective stage of *Trichomonas hominis* is trophozoite ()

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

1-Write briefly on the sources of Parasitic infection.

2-Name the various intestinal nematodes parasites and describe briefly the life cycle of one of them.

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

4-Compare between:

a-*Entamoeba histolytica* and *Entamoeba coli* cysts

b-*Hymenolepis nana* and *Diphyllobothrium latum* eggs

5- Mention the infective stage, mode of infection and habitat of the following parasites:

Balantidium coli - *Fasciola gigantica* – *Trichomonas vaginalis*

.....
Good luck

Prof. dr., Gamal H. Abed

Aug. 2018

Answer the following question (Write the answer only in your paper)

A- Fill in the blanks: (13 marks)

- 1- *Paramecium* sp. Lives in and feeds mainly on it reproduce asexually by and sexually by
- 2- The association between two organisms may be symbiosis, which means and Parasitism, which means
- 3- The infective stage of *Plasmodium* spp. is
- 4- The intermediate host of *Schistosoma haematobium* is whereas in *S. mansoni* is
- 5- *Trichomonas tenax* lives in but *Trichomonas vaginalis* lives in
- 6- Infection with *Giardia lamblia* is due to but infection with *Ascaris lumbricoides* is due to

B- Choose the one correct answer: (10 marks)

- 1- Male Anopheles mosquito is insect vectors of (*Entamoeba histolytica* - *E. coli* - *Plasmodium falciparum* - *Blattidinium coli* - none of them)
- 2- The infective stage of *Trichomonas vaginalis* (mature cyst- Quadrinucleated cyst- Eightnucleated cyst - none of them)
- 3- The insect vector of *Trypanosoma cruzi* is (mosquito- house fly - sand fly- none of them)
- 4- Man acts as a intermediate host in (*Giardia lamblia* - *Leishmania* - *Entamoeba coli* - *Trypanosoma gambiense* - none of them)
- 5- Sand fly is insect vectors of (*Trypanosoma* spp. - *Plasmodium* spp. - *Entamoeba histolytica* - *E. coli* - none of them)
- 6- *Blattidinium coli* trophozoite have (one nucleus- two nuclei- three nuclei- four nuclei- five nuclei - six nuclei- seven nuclei - eight nuclei)
- 7- The infective stage of *Trichomonas hominis* is (trophozoite- cyst- both)
- 8- Leptocercous cercaria may have (penetration gland- cystogenous gland- both penetration & cystogenous glands)

- 9-*Schistosoma haematobium*, to complete its life cycle requires (one host- two hosts-three hosts - none of them)
- 10- *Trypanosoma* vectors is (male *Anopheles* - house fly - sand fly – *Pulex irritans* - none of them)

C- Put a suitable(✓) or (X) adjacent to the following: (7 marks)

- 1- Transport host, is the host harbouring sexual forms of Protozoa ()
- 2- Fertilization male and female gametes of *Plasmodium* spp. occurs in human blood. ()
- 3 - The insect vectors of *Leishmania* sp is house fly ()
- 4- *Amoeba proteus* lives in human intestine ()
- 5- Trophozoite is a stage of protozoan which can ingest food ()
- 6- Metacercaria are encysted cercariae without tails ()
- 7- Final host, is the host harbouring sexual forms of Protozoa ()

D-Write briefly on four only of the following: (20 marks)

- 1- Sources of parasitic infection
- 2- Types of eggs in *Ascaris* sp.
- 3- *Entamoeba histolytica* and *E. coli* cysts.
- 4-Sexual cycle of *Plasmodium* sp. in stomach of mosquito.
- 5- Prevention & control of *Schistosoma* sp. (Bilhariza).