جامعة أسيوط - كلية العلوم

قسم علم الحيوان

اختبار مادة البيئة المائية ٣٢٣ح ٢٠٢٣-٢٠٢٤

الزمن: ساعتان.

أجب عن الأسئلة الآتية:

س١: اختـــر الإجابة الصحيحة من بين الأقواس ثم اطمس الدائرة المقابلة في ورقة الإجابة المعدة لذلك بالقلم الجاف:

1- Streams are included under: a-(lentic) b– (loetitc) c- (wetlands) d-(all mentioned before are false) waters.
2-Very shallow lakes may have thermal stratification that depends on: a-(microbial processes) b– temperature) c-(Light) d– (all mentioned before are false).
3- Chemicals in lakes, streams, estuaries and wetlands may exist as: a-(simple molecules) b- (complex combinations of organic compounds) c-(complex combinations of inorganic compounds) d-(all).
4-Turtles are considered as: a-(nekton) b- (zooplankton) c-(benthos) d-(all).
5-Organisms found in marine habitat include: a-(Sponges) b-(gastropods) c-(corals) d-(all).
6- The middle step in eutrophication of aquatic ecosystem is: a- (increasing of minerals like phosphate) b-(algal blooming) c- (formation of detritus) d- (all).
7- A low BOD means: a-(less of organic materials) b-(lots of organic material) c-(lots of salts) d–(all).
8- The burrowing aquatic organisms are considered: a-(epibenthic) b- (infauna) c- (zooplankton) d–(all).
9- The identity and quantity of minerals suspended in the lake are affected by: a- (the size of the lake) b-(slope of the lake) c- (acid rains) d- (all).
10-Optimal reef development occurs where the mean annual temperature is about: a- (32:35) b-(30:35) c-(23:25) d-(30-35).
11- a- (Recycling of nutrients) b- (Nekton) c- (plankton) d- (benthos) is considered as a factor that determines any aquatic structure.
12- The common nutrients needed in large quantities for cell development include: a-(CO2) b- (No3) c-(SIO2) d-(all).
13- a-(Rivers) b- (lakes) c- (estuaries) d- (seas) have swift unidirectional water flow.
14- The last step in eutrophication of aquatic ecosystem is a-(the increasing of nutrients) b- (algal blooming) c– (formation of detritus) d- (all).
15- The shallow water in marine habitat is the: a-(profundal) b–(the benthic) c–(the oceanic zone) d- (the photic zone).
16- The producers in aquatic habitat include a-(Zooplankton) b–(Phytoplankton) c– (Nekton) d–(all).
17- a-(Epilimnion) b- (Metalimnion) c- (Hypolimnion) d- (all) is the coldest portion of the lake.
18- Coral reefs development is harmed by: a-(strong wave action) b–(high turbidity) c-(increasing of oxygen) d-(all).
19- a-(Marine ecosystem) b–(Freshwater ecosystem) c- (Lakes) d- (all) covers 71.0% of the Earth's surface .
20- Zooplankton in aquatic habitat is considered as: a-(abiotic factor) b–(chemical factor) c- (living factor) d-(all).
21-The middle step in eutrophication of aquatic ecosystem is: a- (the increasing of minerals like phosphate) b-(algal blooming) c- (formation of detritus) d- (all).
22-The last step in eutrophication of aquatic ecosystem is: a- (the increasing of minerals like phosphate) b-(algal blooming) c- (formation of detritus) d- (all).
23-The producers in deep aquatic habitat include a-(Zooplankton) b–(Phytoplankton) c– (bacteria) d–(all).
24-Increasing of acid rains at certain aquatic habitat will increase a-(erosion of buildings) b- (erosion of railways) c- (breathing diseases) d- (all).
25-Reducing of the coral reefs in The Red sea will decrease a-(productivity of the sea) b-(number of organisms inhabiting the sea) c-(microhabitat for organisms) d- (all)
26- Collecting all algae and plants in an aquatic habitat will a-(destroy the ecosystem) b- (flourish animals) c-(increase populations in the habitat) d- (all).
27- Increasing turbidity of water in the Red Sea will a-(increase zooplankton) b- (decrease corals) c-increase transparency of water d-(all).
28- Adding sewage water to the River Nile: a-(will increase dissolved oxygen in water) b-(increase algal blooming) c-(increase productivity of the Nile) d- (all).
29- A high BOD means: a-(less of organic materials) b-(lots of organic material) c-(lots of salts) d–(all).
30- Acid rains in some countries are products of increasing a-(Co2) b-(nitric oxides) c-Sulphur oxides d-(all) in the air.

اقلب الصفحة من فضلك

س٢: ضع علامة صح أمام العبارة الصحيحة (T=True) وعلامة خطأ (F=False) أمام العبارة الخاطئة ثم ثم اطمس الدائرة المقابلة في ورقة الإجابة المعدة لذلك بالقلم الجاف:

31- Hermatypic corals are worldwide in distribution ( )
32-Leaching of Calcium acetate from soil can occur as a result of acid rains ( ).
33-Acetate and glycolate are inorganic compounds providing food for microbes ( ).
34-Oxbow lakes can occur as a result of extensive meanders of rivers ( ).
35-Humic acid and Citrate are produced by decomposition of dead animals in lakes and streams ( ).
36-Euryhaline organisms are considered heterotrophs in aquatic ecosystem ( ).
37-Algae are considered autotrophic organisms in aquatic ecosystems ( ).
38-Cu- Zn acts as toxicants or as growth stimulators ( ).
39-Light is considered one of the limiting factors of corals that restricts their distribution in the tropical areas ( ).
40-The intertidal zone is the bottom or deep water ( )
41-Temperature is the limiting factor of corals that restricts their distribution in a certain depth ( ).
42-Chelating compounds are able to change the ionic state of metals that otherwise be toxic ( )
43-Freshwater ecosystem generates 3% of the world's net primary production ( ).
44-Estuaries are important nursery areas for fish and birds ( ).
45- Humic acid belongs to the refractory compounds in natural waters ( ).
46-The littoral zone is the open water of the lake ( ).
47-BOD Measures the rate of carbon dioxide consumption by a sample of water ( ).
48-The epilimnion is the portion of the lake where the rate of light change with depth is the greatest ( ).
49-Wetlands are the areas where the soil is unsaturated or inundated for at least part of the time ( ).
50-Acid rains in some countries are products of increasing nitric oxide in the air ( ).

With best wishes

Assiut University
Faculty of science
Zoology Department

2024

Final exam
Course number: 321 Z
Parasitology
Time: 2 hours

Answer the following question **(Total 50 marks)**

A- Select the single best answer for each of the following **(1 marks/ each)**

1. The infective stage of *Loa Loa* is

(a) Filariform larvae (b) Embryonated egg

(c) Microfilaria (d) Cysticercoid

2. Human acts as an intermediate host of the following parasites except

(a) *Taenia solium* (b) *Toxoplasma gondii*

(c) *Echinococcus granulosus* (d) *Wuchereria bancrofti*

3. Which of the following parasites can be reactive in immunosuppressed hosts

(a) *Enterobius vermicularis* (b) *Clonorchis sinesis*

(c) *Toxoplasma gondii* (d) *Balantidium coli*

4. Which of the following parasites can cause deficiency in vitamin B12

(a) *Ascaris lumbercoides* (b) *Loa Loa*

(c) *Diphyllobothrium latum* (d) *Schistosoma haematobium*

5. Cercariae of *Schistosoma* and *Fasciola* are different in the following except

(a) Tail (b) Penetrating glands

(c) a & b (d) Alimentary canal

6. The infective stage of *Naegleria fowleri* is

(a) Cyst stage (b) Amoeboid form of trophozoite

(c) Flagellated form of trophozoite (d) Embryonated egg

7. The ovoviviparous parasite is

(a) *Wuchereria bancrofti* (b) *Enterobius vermicularis*

(c) Loa Loa (d) *Ascaris lumbercoides*

8. Which of the following parasites correlated to neurological manifestations

(a) *Enterobius vermicularis* (b) *Balantidium coli*

(c) *Acanthamoeba castellanii* (d) *Heterophyes heterophyes*

9. Which of the following larval stages in *Plasmodium* spp. has penetrating glands?

(a) Trophozoite (b) Ring stage

(c) Ookinete (d) Oocyst

10. Humans get infected with the hydatid cyst of *Echinococcus granulosus* when they ingest

(a) a flea that contains the larval tapeworm (b) the tapeworm egg from dog feces

(c) the tapeworm cysticercus from raw beef (d) the tapeworm egg from human feces

11. Quadrinucleated cyst is an infective form of

(a) *Entamoeba coli*
(b) *Balantidium coli*
(c) *Giardia lamblia*
(d) *Trichomonas hominis*

12. The operculated egg is a diagnostic stage of

(a) *Schistosoma mansoni*
(b) *Taenia saginata*
(c) *Ancylostoma duodenale*
(d) *Diphyllobothrium latum*

13. Large trophzoite of *Entamoeba histolytica* feeds on

(a) RBC and mucosa
(b) blood
(c) Digested food
(d) Mucosa in the colon

14. Amastigotes in *Leishmania* sp are present in

(a) WBCs
(b) RBCs
(c) Plasma
(d) Sand fly

15. Autoinfection could be propagated by

(a) *Taenia solium*
(b) *Schistosoma haematobium*
(c) *Fasciola hepatica*
(d) *Trichomonas vaginalis*

16. All the following are different between Pseudophyllidae and Cyclophyllidae except

(a) Location of genital pore
(b) The shape of ovary
(c) The adhesion organs
(d) They have no digestive system

17. All the following parasites can be transmitted congenitally except

(a) *Trypanosoma cruzi*
(b) *Toxoplasma gondii*
(c) *Plasmodium* spp.
(d) *Giardia lamblia*

18. Diagnostic stage of *Plasmodium* spp. in human blood is

(a) Ring stage
(b) Sporozoites
(c) Merozoites
(d) Oocyst

19. Amoebic meningitis is a disease that can be caused by

(a) *Entamoeba histolytica*
(b) *Naeglaria fowleria*
(c) *Entamoeba gingivalis*
(d) *Entamoeba coli*

20. Coracidium is a larval stage in

(a) *Echinococcus granulosus*
(b) *Taenia saginata*
(c) *Diphyllobothrium latum*
(d) *Schistosoma mansoni*

21. Which one of the following can be infect human incidentally?

(a) *Diphyllobothrium latum*
(b) *Dipylidium caninum*
(b) *Fasciola hapatica*
(d) *Clonorchis sinesis*

22. The infective stage of *Ascaris lumbercoides* is

(a) Embryonated egg
(b) Microfilaria
(c) Filariform larva
(d) bladder worm

23. The filaria worm Loa Loa can be infected

(a) Lymphatic system
(b) Subcutaneous tissues
(c) Central nervous system
(d) Serous cavity

24. Contaminated green salad causes infection with

(a) *Trypanosoma* spp.
(b) *Plasmodium* spp.
(c) *Ascaris lumbercoides*
(d) *Trichomonas vaginalis*

25. Each of the following parasites are transmitted by mosquitoes except

(a) *Leishmania donovani*
(b) *Plasmodium falciparum*
(c) *Plasmodium vivax*
(d) *Wuchereria bancrofti*

26. Each of the following statements concerning *Ascaris lumbricoides* is correct except

(a) *Ascaris lumbricoides* is one of the largest nematodes

(b) *Ascaris lumbricoides* can cause pneumonia

(c)Both dogs and cats are intermediate hosts of *Ascaris lumbricoides*

(d) *Ascaris lumbricoides* are transmitted by ingestion of embryonated eggs

27. The infective form of *Leishmania* is

(a) Promastigotes
(b) Epimastigotes
(c) Metacyclic trypansoma
(d) Crithidia form

28. The infective stage of *Ancylostoma duodenale* is

(a) Rhabdtoid larva
(b) Embryonated egg
(c) Filariform larva
(d) Fertilized egg

29. The intermediate host of *Echinococcus granulosus* is

(a) Man
(b) Cattle
(c) Sheep
(d) All of the above

30. Two hosts are required in the following parasites except

(a) *Fasciolepsis buski*
(b) *Dipylidium caninum*
(c) *Echinococcus granulosus*
(d) *Enterobius vermicularis*

B- Mention which (True) or (False) of the following sentences (1 mark/each)

31. The crithidial form in *Trypanosoma* spp. has undulating membrane ( )
32. *Dipylidium caninum* can infect man accidentally ( )
33. Cattle infects with liver flukes by consumption of metacercaria with food ( )
34. All cercariae may have both penetration and cystogenous glands ( )

35. *Ascariasis* and *Enterobiasis* are more prevalent in children ( )

36. Redia is a larval stage in *Schistosoma mansoni* ( )

37. *Naegleria fowleri* is permanent parasite of man ( )

38. *Trichomonas vaginalis* has four anterior flagella and one posterior flagellum ( )

39. Mutualism is an association between two organisms that is necessary for both and from which both benefit ( )

40. Chagas disease is caused by *Trypanosoma rhodesiense* ( )

41. Autoinfection can occur in *Hymenolepis nana* ( )

42. *Schistosoma haematobium* inhibits the vesicular venous plexuses ( )

43. Parasites which are to a given host, but in abnormal situation are obligatory parasites ( )

44. Human, cats, and dogs are definitive hosts of *Heterophyes heterophyes* ( )

45. The diagnostic stage of *Fasciola gigantica* is eggs in feces ( )

46. *Plasmodium* sp. can be diagnosed through thin blood film ( )

47. Facultative parasites are those that attack or establish themselves in unusual host. ( )

48. Oocyst is the zygote after the formation of the cyst wall ( )

49. Eosinophilia is a common diagnosis of parasitic disease ( )

50. Costa is a cytoplasmic structure seen at the base of undulating membrane of intestinal flagellates ( )

Good luck.....

Prof. Dr., Gamal H. Abed
Dr. Sara S. Abdel-Hakeem

Assiut University
Faculty of Science
Zoology Department

Third year Exam (Zoology)
Vertebrate 2 (330-Z)
Time: one hour
2/1/2023

Question I: Choose the correct answer of the following

1- Which of the following is a definition of flight-less bird group?

a) Ratite b) elephant birds c) Seabirds

2- Which of the following statements is not true?

a) Monotremes are the only group of living mammals that lay eggs
b) Monotremes are reptiles-like mammals
c) Monotremes have a clavicle

3- Which of the following is not a characteristic of amniotes?

a) It is composed of three major lineages
b) Embryos enveloped in extraembryonic membranes.
c) Has developed Atlas and Axis vertebrae

4- Which of the following have Faveoli are prominent anteriorly, but they decrease gradually and become absent posteriorly?

a) Snakes b) lizard c) Crocodiles

5- Which of the following features apply to birds?

a) Lack temporal fenestrae and breathing by help air sacs
b) Endothermic and have pair temporal fenestrae
c) Endothermic, have developed sternum, and pair of ovary

6- What do we call the group of animals with a gastrilia?

a) Mammals b) Birds c) Reptiles

7- Which of the following is a unique characteristic that distinguishes a turtle from other reptiles?

a) The appendicular skeleton lies within the rib cage
b) Breathing by help of abdominal muscle
c) Have a dermal bones within the integument

8- Choose the answer below that correctly matches the parareptilian with its structural characteristics

a) Reptiles, lack temporal fenestrae and breathing by help some abdominis muscles

b) Reptiles, ectothermic and have one temporal fenestrae

c) Reptiles, lack temporal fenestrae and breathing by help the diaphragmaticus muscle

9- Which of the following is a unique characteristic that distinguishes a Columbiformes from other predator's birds?

a) The crop secretes a nutritional fluid called "milk

b) Sharp claws

c) Shiny feathers

10- Select the characteristics of amniotic vertebrates.

a) They have four legs

b) They breathe by aspiration pump

c) They reproduce by giving birth.

11- What do we call the third aortic arch in amniotes?

a) Systemic arch

b) Pulmonary arch

c) Carotid arch

12- What is the function of lingual apparatus in Gecko?

a) Feeding and chemoreceptors

b) Feeding and respiration

c) All of above

13- Fishes and amphibians lack the extraembryonic membranes of amniotes, except.....membrane

a) One b) two c) three

14- Which of following appear in crocodiles?

a) Acrodont teeth, gizzard, diaphragm

b) Thecodont teeth, diapsidian skull, lack sternum

c) Gizzard, gastralia, panizza foramen

15- Which of the following have prokinetic skull and lack upper and lower temporal bars?

a) Amphisbaenians b) Lizards c) Snakes

16- The pinna absent in.....mammals

a) Marsupials b) Monotremes c) Eutherian

17- In amphibian, the zeugopodium of forelimb is composed of..... bones

a) Two separated b) Two fused c) None of above

18- Snakes are responsive to seismic and airborne sounds due to.....

a) Have sensitive tympanum.

b) The stapes is attached at one end to the quadrate bone

c) All of above

19- In amniotes, remnants of the .....may persists in larval stages, but adults have .....kidneys.

a) Mesonephros- metanephric

b) Pronephros- metanephric

c) Opsithonephros- metanephric

20- The aspiration pump in the crocodile uses.....

a) Back-and-forth movements of the liver like a piston on the lung

b) The movement of the rib cage

c) all of above

21- Most modern lizards are.....joint across their skull roofs.

a) Mesokinetic

b) Meta- and mesokinetic

c) Metaokinetic

22- The lacrimal is absent and the jugal bones are small in.....

a) Birds

b) Monotremes

c) Marsupials

23- .....are often specialized for display located at the base of beak.

a) Filoplumes

b) Flight

c) Down

24- Gastralia are common in some.....

a) Lizards and crocodiles

b) All reptiles

c) Snakes and crocodiles

25- Molting or ecdysis process occurs in .....

a) Lizards and snakes

b) All reptiles

c) Only Snakes

Question II: Choose whether the statement is true or false:

26- The sternum is absent in turtles, crocodiles, and many limbless lizards, but is common in other reptiles.

27- Reptile's braincase distinguishes from the mesosaurs.

28- The aspiration mechanism in lizard depends on activity of the intercostal muscles.

29- In reptiles, the teeth not only capture or clip food but are specialized to chew it.

30- Conus arteriosus lack cardiac muscle.

31- During exhalation (2) in birds, spent air is pushed out of the lungs and exits with air from the posterior air sacs.

32- The cloaca of snakes and lizards also has three compartments, but the urodeum is usually reduced like monotremes.

33- The squamate's heart has one ventricle with three cava.

34- The ventricle is divided into two chambers in only birds and mammals.

35- Only birds have gizzard and crop.

36- Duvernoy's gland is situated along the posterior lower lip, releases serous secretion in many nonvenomous snakes.

37- Platypus like birds has left ovary functional.

38- The semicircular canals respond to sound and rotation that occur when the head is rotated or turned.

39- Lizards and crocodilians possess short the external auditory meatus with pinna.

40- . The mammals arose within the synapsids radiation.

41- In mammals, five distinct regions are differentiated within the vertebral column.

42- The anterior air sacs include single interclavicular sac and paired cervical and anterior thoracic.

43- Monokinesis is present in amphisbaenians and some lizards.

44- Feather of Archaeopteryx shows the symmetrical design of the vane as in modern birds.

45- Both halves of the lower jaw of snake are joined at the mandibular symphysis by flexible soft tissues.

46- In bird, the lower temporal bar is absent, and the upper temporal bar is a slender rod called the jugal bar.

47- The amniote radiation is composed of three major lineages, the Sauropsida, therapsida and Synapsida.

48- The tongue collects airborne particles and wipes these particles onto the vomeronasal organ on the roof of the mouth, this process occur in only snakes and Lizards.

49- Down and contour feathers lie close to the skin as thermal insulation.

50- The gastralia are of dermal origin and restricted between sternum and pelvis and do not articulate with the vertebrae.

Answer the following questions: (total, 50 marks)

QI. Write down the correct answer or its number (A, B, or C) in the answering sheet (22 marks).

1)) The human skin gland with the least contribution to body odor is:

A) sebaceous gland B) apocrine gland C) eccrine gland

2) Whitten effect arises as a result of exposure to:

A) releaser pheromone B) primer pheromone C) allomone

3) Ants use:

A) trail pheromone B) signaler pheromone C) both pheromones

4) The attraction of flesh flies to the bad smell of dead animal bodies is:

A) an acquired behavior B) an adaptive behavior C) not adaptive behavior

5) The neural mechanism of habituation in non-human animals involves:

A) many neurons B) brain structures C) a few number of neurons

6) Messages that can be read in the absence of their sender include:

A) marking pheromone only B) trail pheromone only C) both pheromones

7) Empathy is essentially associated with:

A) self-recognition B) insight learning C) chemical communication

8) Responding differently to the same signal could be found in:

A) macaque monkeys B) vervet monkeys C) rhesus monkeys

9) Termites are:

A) social animals B) eusocial animals C) semi-social animals

10) Social pheromones are found only in:

A) social insects B) social vertebrates C) social marine mammals

11) Gestalt abilities are essential for:

A) insight learning B) self-recognition C) both

12) Comparative psychology is the comparative study of:

A) behavior B) ethology C) sociobiology

13) Sociobiology school of studying animal behavior is:

A) European B) worldwide C) focusing on insects

14) The attraction of male Australian jewel beetle to brown grainy bottles is a response to:

A) pheromone B) supernormal releaser C) normal releaser

To be continued in next page.

15) Bruce effect in mice is beneficial to:

A) males only B) females only C) both males and females

16) Ethological principles can improve the experiments of:

A) classical conditioning B) operant conditioning C) context learning

17) The preference of supernormal releasers is:

A) found in humans B) socially learned C) acquired by conditioning

18) Young mammals are relatively better than adults at social learning, because they are:

A) healthier B) more intelligent C) more attentive

19) The difference between imitation and emulation is that emulation:

A) needs more thinking B) needs Gestalt abilities C) more common in animals

20) A woman's menstrual cycle can be lengthened by exposure to another woman's sweat collected at:

A) follicular phase B) ovulatory phase C) luteal phase

21) The dependence of mate selection on the major histocompatibility complex (MHC) was discovered in:

A) humans B) mice C) both humans and mice

22) The unintended communication between researchers and their experimental subjects is known as:

A) Bruce effect B) number size effect C) Clever-Hans effect

QII. Describe only *four* of the following: (16 marks)

a) The false-belief test

b) Innate behavior

c) Deliberate deception in animals

d) Associative learning

e) Lee-Boot effect and its biological significance

QIII. Write an account on *three* of the following: (12 marks)

a) Self-recognition in animals and the phenomena based on it

b) Hexadecanal as a putative human pheromone

c) Weber's law and how it applies to arithmetic abilities in both humans and chimpanzees

d) Sources of doubt and sources of support, regarding the existence of human pheromones

End of questions

Examiner: Prof. Dr. Medhat M. Sadek

Assiut University, Faculty of Science

Zoology Dept., Zoology program

Time allowed: 2 hours

50 marks

Final exam, 14-01-2024

1st semester, 2023-2024

Molecular biology (311 Z)

I- Choose the correct answer: *(30 marks, one mark for each)*

1- Eukaryotic primase is intrinsic to……. **a- Pol ε. b- Pol δ c- Pol β d- Pol α**	2- in transversion mutation, the C≡G becomes…. **a- G≡C b- C≡G c- T=A d- G=I**
3- ……is a conserved eukaryotic promoter element usually located around 25 pb upstream from the start point. **a-TATA box b- CAAT box c- CAP site d- GC box**	4- In prokaryotes, the RNA primer is replaced by DNA one by ……. enzyme. **a- Polymerase III b- helicase c- Polymerase I d- primase**
5- RNA polymerase I makes…… in eukaryotes. **a- tRNA b- snRNA c- 28 S rRNA d- hnRNA**	6- An example of high copy number genes is……. **a- ribosomal genes b- Transposons c- pseudogenes d- not mentioned**
7- In prokaryotes, the sequence of Pribnow box is... **a-5'-TATAAA-3' b- 5'-TATAAT-3' c - 5'-TATA-3 d- 3'-TATAAA-5'**	8- RNA replicase…… **a- is a DNA polymerase b- uses DNTPs c- uses DNA template d- uses RNA template**
9- Poly A polymerase is ……polymerase. **a-DNA-dependent DNA b- RNA-dependent RNA c- DNA-dependent RNA d- all answers are incorrect**	10-Indels mutation which is not divisible by 3 usually results in ……. **a-missense mutations b- frame shift mutations c- silent mutations d- neutral mutations**
11- …. are genes which no longer possess the ability to code for a protein. **a-Pseudogenes b- transposons c- hemoglobin d- not mentioned**	12- Prokaryotic mRNA…… **a- is polycistronic b- has Shine-Dalgarno sequence c- has no splicing d- all answers are correct**
13- ……. is engaged in cap synthesis of mRNA. **a-Acetyltransferase b- methyltransferase c- demethylase d- not mentioned**	14- The amount of junk DNA is…… from lower to higher organisms. **a-stable b- decreased c- increased d- mutated**
15- Which of the following arms of tRNA contains dihydrouracil. **a-D arm b- T Ψ C arm c- anti codon arm d- amino acid acceptor arm**	16- All humans' genes contain introns except ……. genes. **a-Hemoglobin b- ribosomal c- histone d- immunoglobulin**
17- Which of the following arms of tRNA contains a ribosome recognition site. **a-D arm b- T Ψ C arm c- anti codon arm d- amino acid acceptor arm**	18- Primase is ……polymerase **a-DNA-dependent DNA b- RNA-dependent RNA c- RNA-dependent DNA d- DNA-dependent RNA**
19- Which of the following transcription factors stay until elongation of mRNA is finished. **a- TFIIB b- TFIID c- TFIIE d- TFIIH**	20- A type of mutation where base pair substitution results in a stop codon. **a- indels mutation b- silent mutation c- missense mutation d- Nonsense mutation**
21- ……represents a palindromic sequence in a double strand DNA. **a-5`-GAACTA-3` b- 5`-GGAACC-3` c-5`- GTATAC-3` d- all answers are correct**	22- ……is a physical gene delivery method **a - microinjection b- electroporation c- sonication d- all answers are correct**

23- probability of a particular type of mutation per unit time (or generation). **a-Germ line mutation b- frame shift mutation c- mutation frequency d- mutation rate**	24- Which of the following is used as reporter gene. **a- green fluorescent protein b- ampicillin c- Methylase d-acetylase**
25- The loop of the anticodon arm of tRNA contains ..... nucleotides. **a-5 unpaired b-5 paired c- 7 paired d- 7 unpaired**	26- In *E. coli* mismatch repair system..... bind(s) the mismatch site and scan(s) the DNA for GATC sequence. **a- MutS b- MutL c- both MutS and MutL d- MutH**
27- Proteasome is responsible for the degradation of ..... Proteins. **a- acetylated b- methylated c- ubiquitinated d- phosphorylated**	28- In base excision repair system..... excises a damaged nucleotide base. **a- 5′-dRP b- AP endonuclease c- glycosylase d- UvrD**
29- In tRNA, the amino acid attachment site is.... **a-5′ACC 3′ b- 5′CCA 3′ c- 5′AAC 3′ d- 5′CAA 3′**	30- In eukaryotic short patch base excision repair, only one nucleotide is inserted by ..... prior to ligation. **a- Pol ε. b- Pol δ c- Pol β d- Pol α**

II-Put (T) or (F) for true or false sentences, respectively. *(20 marks, one mark for each)*

31-Prokaryotic mRNA is generally code for only one polypeptide.	32- Telomeres are satellite DNA.
33-Most Bacteria have Histone genes.	34-TATA box is usually surrounded by GC rich sequence.
35- Most junk DNA is transcribed into RNA.	36- The loop of the T Ψ C arm of tRNA contains 5 paired nucleotides.
37- Histone deacetylases do not have DNA-binding domains.	38- DNA methylation of CpG occurs in 5` position cytosine.
39-In prokaryotes, both transcription and translation occur simultaneously.	40- Prokaryotes have 3 types of RNA polymerases.
41-Eukaryote genes are not grouped in operons.	42-When the ends of the restriction fragment are complementary, they are called Sticky ends.
43- The transcription factor acts as its own transcription repressor.	44-Pol α in eukaryotes is a low-processivity enzyme.
45-Both mRNA and Small nuclear RNAs (snRNAs) have 5` cap.	46- In hnRNA splicing, the intron is released along with snRNPs (U2, U5, and U6).
47-The pseudogenes are mobile genetic element that can change its location in the genome.	48-hnRNA contains both introns and exons.
49- Reverse transcriptase is not engaged in pseudogenes processing.	50- Transversion mutations are more frequent than transition mutations.

End of questions, best wishes

Prof. Dr. Abo bakr Eltayeb

Assiut University
Faculty of Science
Zoology & Entomology Department

First semester Insect Physiology Exam
(9 – 1 – 2024)

Time: 2 hours
Level: Three
Course Code: 343Z

Note: the questions on five pages and the answers in the same place

Answer the following questions **(50 marks)**

First Question: Choose the best correct answer: **(15 marks)**

1. In springtails,……..are supposed to be involved in excretion.
   a) Nephrocytes b) Labial gland c) Utricular glands d) Fat body
2. …… is a contraction phase of heart contraction of muscles of heart wall.
   a) Diastole. b) Systole. c) Diastasis d) Presystolic notch.
3. …… the major complex polysaccharide present in plant tissue, cannot be digested by most insects.
   a) Trehalose. b) Cellulose. c) Starch. d) Sucrose.
4. What are epidermal cells secreted first at molting?
   a) Epicuticle b) Wax c) Cuticulin d) Procuticle
5. Which of the following secrete juvenile hormone?
   a) Neurosecretory cells b) Corpora cardiaca c) Corpora allata d) prothoracic gland
6. What is Deutocerebrium usually innervate?
   a) Labrum b) labium c) Compound eyes d) Antannae
7. Which substances that all epidermal cells probably secrete?
   a) Lipid b) Chitin c) Wax d) All of them
8. …… are present in the hindgut, capable of absorbing inorganic ions from the dilute solutions.
   a) Nephrocytes b) Crystal cells. c) Chloride cells. d) Spherule cells.
9. What is the main function of oenocytes?
   a) Lipid secretion & metabolism.
   b) Protein secretion & metabolism.
   c) Production of material of the cell plasma membrane.
   d) Secretory substances necessary to synthesize cuticle.
10. Functions of haemolymph include …… .
    a) Thermoregulation b) Lubrication. c) Protection. d) All previous answers.
11. …… are the stem cells from which other haemocytes are derived.

a) Plasmatocytes b) Proleucocytes. c) Adipohaemocytes. d) Granulocytes.

12. What is the type of position in which, insect egg retained and the embryo fed by mother.

a) Oviparous b) viviparous c) Ovi-viviparous d) Parthenogensis

13. .....are enzymes which attack large proteins internally at the linkage between certain amino acid, thus breaking the protein into smaller polypeptides.

a) Metalloproteinases b) Endoproteinases. c) Exopeptidases. d) Aminopeptidases.

14. It is somewhat thick and consist of sceleroprotein.

a) Endochorion b) Exochorion c) Chorion d) b & c

15. .....is the main excretory product by aquatic insects, very toxic substance and require large amount of water for elimination.

a) Uric acid. b) Ammonia. c) Urea. d) Amino acids.

Second Question: Put (True) or (False) in front of the following substances:

(10 Marks)

1. The color of beetles depend on how much wax is secreted to the surface. ( )
2. PTTH stored in corpora cardiaca and released at the time of switchover from pupal to adult stage. ( )
3. Some of the hardest parts of cuticle do not contain chitin. ( )
4. In Lepidoptera, BH is stored in corpora cardiaca. ( )
5. The rate of beating is low in fresh moulted larva and quite high in before moulting larva. ( )
6. Ecdysone is shown some inhibitory effect on spermatogenesis. ( )
7. In the primitive orders, labial glands are supposed to be involved in excretion. ( )
8. In all insects, there is a thin layer of cuticle called epicuticle at the insect's surface. ( )
9. The ventral diaphragm is a fenestrated connective tissue membrane, which allows hemolymph to enter the pericardial sinus. ( )
10. Resilin must be very sclerotized, so, it can be returns to 97% of its original length upon prolonged stretching. ( )
11. Fat body is the main organ of excretion and osmoregulation in insects. ( )
12. The structural colors of some insects do not depend on the lamellae of exocuticle. ( )
13. Cryptonephridial arrangement in which, the distal ends of the Malpighian tubules are lying freely in the body cavity. ( )

14. Protein makes up 40% of the dry weight of insect egg. ( )
15. The regenerative cells grow into mature epithelial cells gradually to replace cells worn out. ( )
16. In opportunistic feeders, the crop composes less than half of the alimentary canal. ( )
17. During systole the valves on the incurrent ostia will close and prevents the out flow and back flow of blood. ( )
18. Efferent neurons, always carry information toward the central nervous system. ( )
19. The haemolymph circulation always takes place in antero-posterior direction in dorsal blood vessel. ( )
20. Carbohydrate-digesting enzymes are secreted only by the salivary glands. ( )

Third Question: Write the suitable terminology of the following sentences. (5 Marks)

1. The tanning hormone which controls of darkening and hardening of the cuticle and wing expansion. (.....).
2. The patches of lipid which broke the epicuticle cement layer. (..... .....).
3. The most common type of enzyme secretion by midgut cells. (.....).
4. A ballon-like sac makes by Diptera to facilitate ecdysis. (.....).
5. Structures that maintain circulation through the appendages of insects. (.....).
6. Muscles that are closely associated with the heart. (.....).
7. A pair of terminal abdominal ganglia innervate the anus, internal &external genitalia and cerci. (.....).
8. The removal of waste products of metabolism, especially nitrogenous compounds from the body of insects. (.....).
9. The whole developmental process by which immature insect's first instar is transformed into the adult. (.....).
10. The major complex polysaccharide present in plant tissue cannot be digested by most insects. (.....).

Fourth Question: Write the functions of the following: (5 marks)

1. The integument.

   .....

   .....

2. Nephrocytes.

.....

.....

3. Male accessory glands.

.....

.....

4. Malpighian tubules.

.....

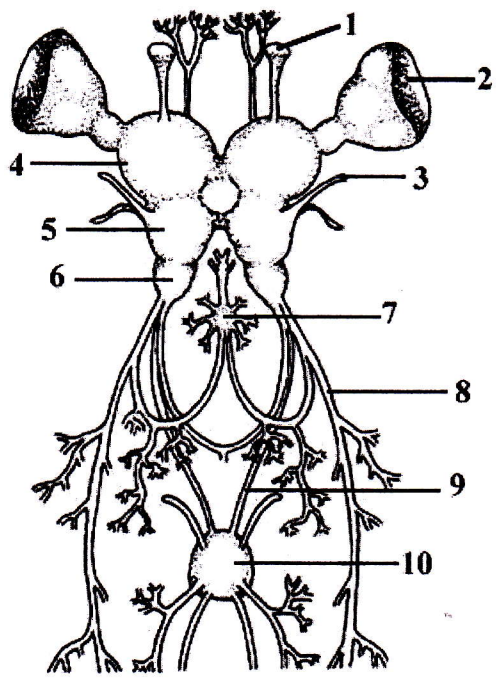
.....

5. Ecdysone or moulting hormones.

.....

.....

Fifth Question: Define and labeling the following diagram. (5marks)



Sixth Question: Write short notes about four parts only of the following: (10 marks)

1- What are the gastric caeca? What function do they have?

2- How new cuticulin is protected from digestion by moulting fluid?

3- What function does the glycocalyx play in the digestive system of some insects?

4- Hormonal control of oogenesis.

5- Describe the heartbeat and what factors affecting the rate of the heartbeat?

6- The structure and function of visceral nervous system.

Assiut University
Faculty of Science
Zoology and Entomology Department

Course: Genetic Engineering
Course code: (314Z)
Time: Three hours

Final exam (January, 2024)

Answer the following questions

I: Answer the following (20 marks)

1- Insertion and replacement lambda phage vector
2- Structure and how Zinc finger nucleases work in genetic engineering
3- Explain with drawing the main steps of RNA interference
4- Differences between knock in, down and out
5- Limitations of using site specific nucleases in gene knockout

II: Define ten only the following terms (20 marks)

1- Blunt cutter and sticky end cutter RE
2- Palindromic sequence
3- Chemical and physical methods of DNA introduction
4- *In vitro* transcription
5- Expression and cloning vector
6- Selective marker in plasmid DNA
7- Mirror like and inverted repeat sequences
8- Homologous recombination
9- Mechanisms of DNA repair in site specific nucleases
10- List 3 applications of TALENs
11- Chimeric organism

III: Choose the best correct answer (10 marks)

1- Ligase enzyme connects DNA molecule by .....

a- Forming polynucleotide
b- Forming hydrogen bonds
c- Linking nitrogen bases
d- Attaching purines to pyrimidines

2- To clone single stranded DNA, it is likely to use .....vector

a- Lambda phage b- M13 c- Plasmid d- BAC

3- Which enzyme of the following is responsible for making a DNA copy from RNA?.....

a- DNA ligase b- DNA helicase c- Reverse transcriptase d- RNA pol

4- A genomic DNA library is a.....

a- Set of clones representing the entire genome of an organism

b- Set of cDNA clones

c- cDNA fragment inserted into a vector

d- All are true

5- Control of several genes by a single promotor refers to .....

a- MCS b- Transcription control c- Operon d- Translation control

End of questions.....

Good luck

Zoology & Entomology Department	Final-term exam, 1st semester, 2023/2024 Microtechniques (Z 317) Time limit: 2 hours, Date: Jan. 16th, 2024 Total score: 50 marks	

(الامتحان في 8 صفحات)

Choose the correct answer from "A, B, C, or D", then put your answer inside the empty box, under the black arrow: *(50 marks, one mark for each)*

1	**.....is the measure of the binding strength of antigen with antibody at a single binding site.** **A)** Avidity **B)** Sensitivity **C)** Specificity **D)** Affinity	
2	**..... are homogenous population of Ig against a single epitope** **A)** polyclonal antibody **B)** myeloma cells **C)** hybrid cells **D)** Monoclonal antibody	
3	**.....method of IHC staining relies upon the strong affinity avidin for biotin** **A)** LSAB **B)** ABC **C)** Avidin-biotin complex **D)** B & C	
4	**The process which paraffin wax must be removed from the sample in immunohistochemistry is known as.....** **A)** Permeabilization **B)** Fixation **C)** Antigen retrieval **D)** Deparaffinization	
5	**.....stain is a colorless chemical compound that can be converted by chemical reaction into Colure compound.** **A)** DAP **B)** Coomassie blue **C)** Ponceau Red **D)** Trypan blue	

6	**Electrophoresis tank for agarose Gel filled with 1x of …… buffer** **A)** TAE **B)** TBST **C)** PBST **D)** BSA	
7	**Which of the following statements about agarose gel electrophoresis is False?** **A)** Electrophoresis in agarose is a common way to separate DNA molecules according to size. **B)** Ethidium bromide is used to detect DNA. **C)** Under the electrical field, (+) charged DNA will migrate towards the (-) charged end of the gel. **D)** None of them	
8	**A chromogen is added to the gel to visualize the separated DNA under UV transillumination is……** **A)** Ethidium bromide **B)** EtBr **C)** DAB **D)** A &B	
9	**In gel electrophoresis, the molecules to be separated are pushed by an…… through a gel.** **A)** electrical field **B)** electromotive force **C)** A & B **D)** electromagnetic force	
10	**……is a low concentrated polyacrylamide gel layer in SDS-PAGE technique.** **A)** Separating gel **B)** Stacking gel **C)** resolving gel **D)** A & C	
11	**Detection with Substrate by ……in western blot when use specific x-ray film.** **A)** Colorimetric **B)** Enhanced chemiluminescent **C)** Trypan blue **D)** Ethidium bromide	
12	**The proteins are moved from the gel onto a nitrocellulose membrane by ……..buffer in western blot.** **A)** Transfer **B)** electrophoresis **C)** Lysis **D)** blocking	
13	**The first Step involved in western blotting is ……..** **A)** Sample preparation and Gel Electrophoresis **B)** transfer **C)** Blocking **D)** Blotting	

14	**In ..... which, The membranes are solubilized, lysing cells and liberating their contents.** **A)** Detergent lysis **B)** Ultrasonication lysis **C)** Freeze/thaw lysis **D)** Enzymatic digestion lysis	
15	**The suitable incubation of labeled secondary antibody directed against the region of the primary antibody in western blot at.....** **A)** Five hours at room temperature **B)** one hour at room temperature **C)** overnight at 4°C **D)** one hour at -20°C	
16	**It's the passage of cells when they reach to..... confluency in flask.** **A)** 50 % **B)** zero % **C)** 80-90% **D)** 20-60 %	
17	**For non-stain cell culture visualization; we can see cells by..... microscope.** **A)** Electron **B)** Light **C)** Fluorescent **D)** Inverted	
18	**Resuspend cells in 10% DMSO in FCS when we need for..... Cells.** **A)**sub-culture **B)**cryopreserve **C)**sawing **D)**Passage	
19	**Cells when surgically removed from an organism placed in culture and contains a very heterogeneous population are known as.....** **A)** cell line **B)** secondary culture **C)** cell strain **D)** primary culture	
20	**Blood cells are .....cells.** **A)** Suspension cells **B)** anchorage-dependent **C)** anchorage-independent **D)** A &C.	
21	**Stem cells are unique because** **A)** self-renewing for long time **B)** keeping stemness stage **C)** differentiated **D)** all of them	

22	**.....are unspecialized cells that develop and renew that make up the different types of tissue in the human body.** **A)** Progenitor cells **B)** Specialized cells **C)** Stem cells **D)** Induced pluripotent stem cells	
23	**Digest the bone tissue in collagenase in the steps of isolation stem cell for 45 minute at .....** **A)** 4 C^0 **B)** 56 C^0 **C)** 37 C^0 **D)** 95 C^0	
24	**..... a new type of pluripotent cells that can be obtained by reprogramming animal and human differentiated cells.** **A)** Induced pluripotent stem cells **B)** IPS cells **C)** A & B **D)** Progenitor cells	
25	**.....differentiated into limited number of tissue types and its function for repair.** **A)** Embryonic stem cells **B)** Perinatal stem cells. **C)** Adult stem cells. **D)** induced pluripotent stem cells	
26	**What is the primary aim of vacuum impregnation?** **A)** Increases tissue hardness. **B)** Causes tissue shrinkage. **C)** Facilitates penetration of molten impregnating medium. **D)** Enhances tissue coloration.	
27	**Which technological advancements revolutionized histology in the 20th century, enabling deeper insights into cellular and subcellular structures?** **A)** The invention of the compound microscope. **B)** Electron microscopy and immunohistochemistry. **C)** Advancements in staining techniques. **D)** The discovery of antibiotics.	
28	**What is the primary purpose of tissue fixation in histology?** **A)** To enhance tissue coloration. **B)** To accelerate tissue decomposition. **C)** To stimulate bacterial growth. **D)** To preserve tissue integrity and cellular details.	

29	**What is the primary cause of tissue fragility during embedding?** **A)** Inadequate dehydration. **B)** Excessive clearing agent. **C)** Overheating. **D)** Insufficient heating.	
30	**Which type of paraffin wax remains relatively soft after solidification and is suitable for tissue permeation?** **A)** Impregnation paraffin wax. **B)** Embedding paraffin wax. **C)** Both have similar characteristics. **D)** Neither is suitable for tissue permeation.	
31	**Which tissue sampling technique involves spreading a thin layer of tissue or fluid onto a slide, often using a controlled second slide, for the diagnosis of diseases and identification of abnormalities?** **A)** Smear sampling. **B)** Cryostat sampling. **C)** Biopsy sampling. **D)** Teased sampling.	
32	**When are confocal microscopes particularly useful in histological studies?** **A)** For studying opaque specimens. **B)** For observing basic cellular structures. **C)** For visualizing thick specimens and studying dynamic processes within cells. **D)** For visualizing thin and unstained tissue sections.	
33	**Which common fixative is most frequently used in histology for tissue preservation?** **A)** Glutaraldehyde. **B)** Ethanol. **C)** Xylene. **D)** Formaldehyde.	
34	**What is the advantage of gradually introducing the dehydrant during the dehydration process?** **A)** To speed up tissue dehydration. **B)** To minimize tissue shrinkage and distortion. **C)** To enhance tissue coloration. **D)** To remove all cellular components from tissue.	

35	**What type of microscope is typically used for observing live cells in culture, with the objective lens below the specimen and the light source above?** **A)** Inverted microscope. **B)** Brightfield microscope. **C)** Phase-contrast microscope. **D)** Simple microscope.	
36	**Which of the following is one of the most used clearants in histological laboratories?** **A)** Xylene. **B)** Chloroform. **C)** Water. **D)** Acetone.	
37	**Which type of microscope is commonly used to visualize 3D structures of large and opaque specimens, and is often employed in dissection work?** **A)** Brightfield microscope. **B)** Fluorescence microscope. **C)** Simple microscope. **D)** Stereo microscope.	
38	**For formaldehyde as a fixative, why is it important for this fixative to have a buffering capacity during tissue fixation?** **A)** To accelerate fixation. **B)** To prevent the formation of formalin pigments. **C)** To lower the pH of the fixative solution. **D)** To enhance tissue coloration.	
39	**What may prolonged exposure to clearing agents cause in tissues?** **A)** Increased transparency. **B)** Dehydration. **C)** Enhanced staining. **D)** Over-hardening.	
40	**At what temperature is paraffin wax typically used in the impregnation step?** **A)** Below its melting point. **B)** Equal to its melting point. **C)** 2-3 degrees Celsius above its melting point. **D)** At room temperature.	

41	**What is the primary aim of impregnation/infiltration in histological tissue processing?** **A)** To enhance tissue coloration. **B)** To provide structural support during microtomy. **C)** To dissolve cellular components. **D)** To increase tissue transparency.	
42	**Why is it important to standardize sampling techniques for tissue collection in histology?** **A)** To make the sampling process more complex and time-consuming. **B)** To reduce the number of samples required for analysis. **C)** To maintain consistency and reliability in histological results. **D)** None of the above.	
43	**In histology, what is the potential consequence of using xylene contaminated with water?** **A)** A cloudy appearance in the tissue. **B)** Increased tissue transparency. **C)** Enhanced tissue hardness. **D)** Efficient wax infiltration.	
44	**What is the primary difference between impregnation paraffin wax and embedding paraffin wax in histology?** **A)** Impregnation wax is used for sectioning, while embedding wax provides structural support. **B)** Impregnation wax has a lower melting point, while embedding wax has a higher melting point. **C)** Both waxes serve the same purpose in histological processing. **D)** Impregnation wax solidifies to a hard consistency, while embedding wax remains soft.	
45	**An Italian biologist and physician made significant contributions to the study of anatomy through pioneering microscopic observations of tissues during the late 17th century?** **A)** Johannes Kepler. **B)** Isaac Newton. **C)** Andreas Vesalius. **D)** Marcello Malpighi.	
46	**In the embedding step, what does the melted embedding wax do in relation to the tissue?** **A)** Penetrates the tissue. **B)** Surrounds and molds the tissue. **C)** Dissolves the tissue. **D)** Causes tissue shrinkage.	
47	**Which safety recommendation is advisable for handling clearing agents in the laboratory?** **A)** Open containers to reduce solvent evaporation. **B)** Wear minimal protective gear to maintain flexibility. **C)** Maintain a warm room temperature to enhance solvent evaporation. **D)** Wear protective garments and use exhaust ventilation.	

48	**What is the primary dehydrating agent used in histological processes to remove water from biological tissues?** **A)** Formalin. **B)** Isopropanol. **C)** Water. **D)** Phosphate buffered-saline.	
49	**In tissue processing, what might cause uneven dehydration leading to staining or sectioning difficulties?** **A)** Consistent tissue sizes **B)** Fixatives with low water content **C)** Proper dehydration reagents **D)** Uneven density of tissue	
50	**Which tissue sampling technique involves mechanically separating tissue components, such as muscle and nerve fibers, for detailed study of individual tissue structures and arrangements?** **A)** Teased sampling. **B)** Cryostat sampling. **C)** Biopsy sampling. **D)** Smear sampling.	

End of Questions, With Our Best Wishes!

Prof. Mona M. Atia

Dr. Ahmad U. M. Mahmoud

Zoology and Entomology Department

Insect Taxonomy Final Exam
For Zoology & Chemistry Students
January 2024

Time: 2 hour
Level: Three
Course Code: 340E

Question 1: Choose the best single correct answer (15 marks)

1. **The followings are characteristics of earwings except.....**
   a) Presence of cerci b) Parental care
   c) Tegmina fore wings d) Suctorial mouth parts
2. **The pronotum covers most of the insect head in.....**
   a)Mantis b) Cockroaach c) Grylloblatodea d) Mantophasmatodea
3. **Moniliform antennae are found in the following insects except.....**
   a) Isoptera b) Zoraptera c) Diplura d) Dragonflies
4. **Which of the following is not a characteristic of orthoptera?**
   a) Chewing mouthparts b) Camouflage c) Absence of cerci d) Stridulation
5. **The order Hemiptera contains:**
   a) Bed bugs and stink bugs b) Chewing and sucking lice
   c) Roaches and mantids d) Crickets and grasshoppers
6. **Which one of the following orders is NOT holometabolous?**
   a) Hymenoptera b) Neuroptera c) Siphonaptera d) Phthiraptera
7. **The cerci are asymmetrical in order.....**
   a) Diplura b) Dermaptera c) Ephemeroptera d) Embioptera
8. **Piercing/Sucking mouthparts are NOT found in:**
   a) Fleas b) Lice c) Flies d) Ants
9. **All ametabolous insects are:**
   a) Exognathous b) Predatory c) Endognathous d) Wingless
10. **The lion aphid and ant aphid belong to order.....**
    a) Homoptera b) Hemiptera c) Pscoptera d) Neuroptera
11. **Which of the followings are not belonging to order Coleoptera?**
    a) True bugs b) Fire flies c) ladybird beetles d) Weevils
12. **Mantodea, Dermaptera, Blattodea and Isoptera share the following....**
    a) Wingless b) Herbivory c) Chewing mouthparts d) All
13. **The adults only live for 1-2 days and don't feed in.....**
    a) Ephemeroptera b) Diptera c) Dermaptera d) Blattodea

14. **Which one is correct about termites?**

a) Solitary b) Social c) Holometabolous d) Ametabolous

15. **Book lice belong (s) to order:**

a) Phthiraptera b) Siphonaptera c) Zoraptera d) Psocoptera

16. **Which one of the following orders is NOT ametabolous?**

a) Zoraptera b) Protura c) Zygentoma d) Archaeognatha

17. **The most common insects are.....**

a) Flies b) Wasps c) Beetles d) Ants

18. **Which of the following orders of insects go through their immature stage (nymph) in water?**

a) Odonata b) Ephemeroptera c) Plecoptera d) All

19. **The second smallest insect order and active below freezing.**

a) Zoraptera b) Psocoptera c) plecoptera d) Grylloballtodea

20. **The word Noctuidae is a (an).....name.**

a) Order b) Family c) Superfamily d) Genus

21. **The forelegs are modified into sensory organ in order:**

a) Diplura b) Protura c) Zoraptera d) Embioptera

22. **Which of the following orders has sucking mouthparts as adults?**

a) Orthoptera b) Coleoptera c) Dermaptera d) Lepidoptera

23. **Which insect does NOT have wings at any time in its life cycle?**

a) Fleas c) lice c) Springtail d) All

24. **Which one of the following orders lack cerci.**

a) Hemiptera b) Psocoptera c) Thysanoptera d) All

25. **The lady bugs belong to order....**

a) Hemiptera b) Heteroptera c) Coleoptera d) Homoptera

26. **All the exopterygotes are hemimetabolous.....**

a) True b) False

27. **Lamellate and flabellate antennae are common in:**

a) Butterflies and moths b) Beetles c) Ants d) Wasps

28. **Both moths and butterflies spin chrysalis.**

a) True **b) False**

29. **All wasps, bees and white ants have waist.**

a) True b) False

30. **The butterflies belong to .....**

a) Rhopalocera b) Heterocera c) Heteroptera d) Anisoptera

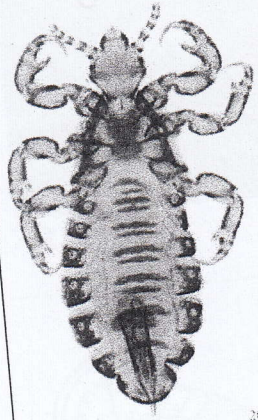
(D)	Butterflies	Moths
1)		
2)		
3)		
4)		
(E)	**Zygentoma**	**Archaenognatha**
1)		
2)		
3)		
4)		
(F)	**White ant**	**True ants**
1)		
2)		
3)		
4)		

Question 2: What are the taxonmical differences between each pair of the following (Five only) **(20 marks)**

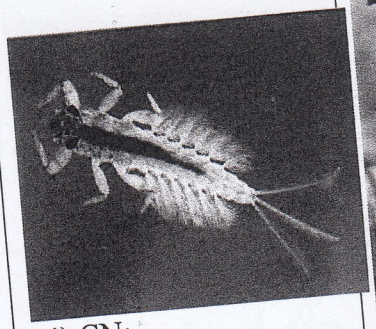
(A)	Suborder Adephaga	Suborder Polyphaga
1)		
2)		
3)		
4)		
(B)	**Praying mantids**	**Cockroaches**
1)		
2)		
3)		
4)		
(C)	**Anisoptera**	**Zygoptera**
1)		
2)		
3)		
4)		

Question 2: What are the taxonmical differences between each pair of the following (Five only) **(20 marks)**

(A)	Suborder Adephaga	Suborder Polyphaga
1)		
2)		
3)		
4)		
(B)	**Praying mantids**	**Cockroaches**
1)		
2)		
3)		
4)		
(C)	**Anisoptera**	**Zygoptera**
1)		
2)		
3)		
4)		



13) O:
CN:

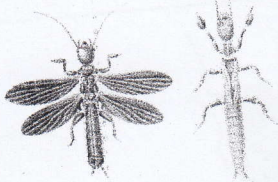


14) CN:

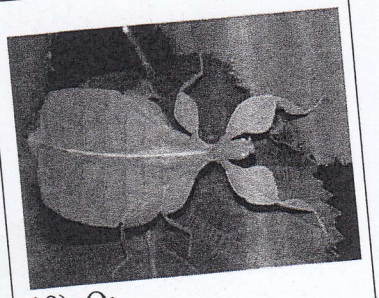
15) CN:

16) O:

A

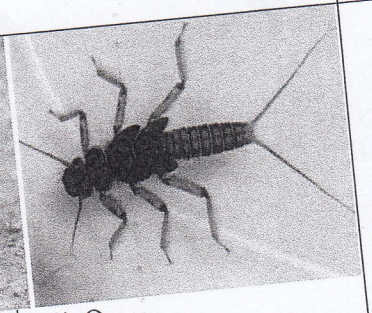


17) O:
CN:
Sex of A:



18) O:
CN:

19) O:
CN:



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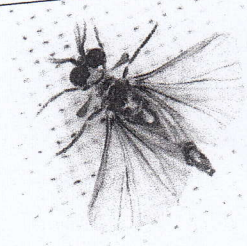
21) O:



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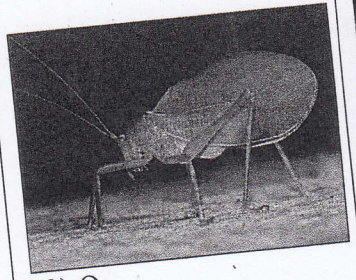

23) O:

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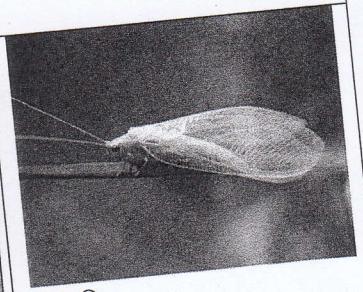
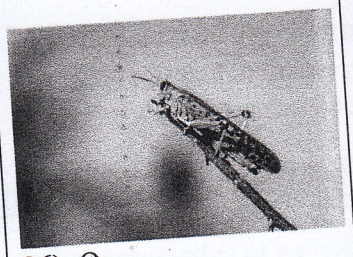


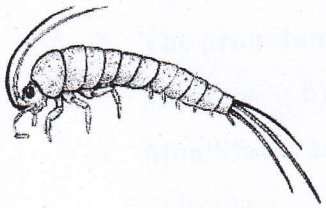
24) O:
CN:

25) O:



26) O:
SO:

27) O:



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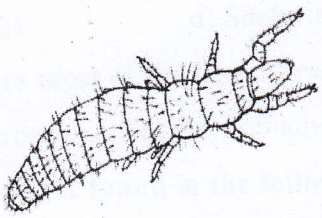
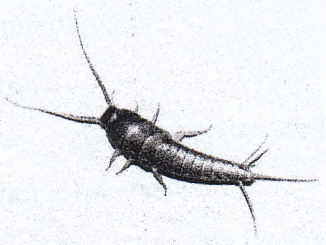


29) O:



30) O
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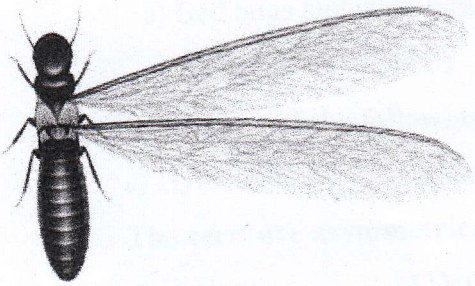
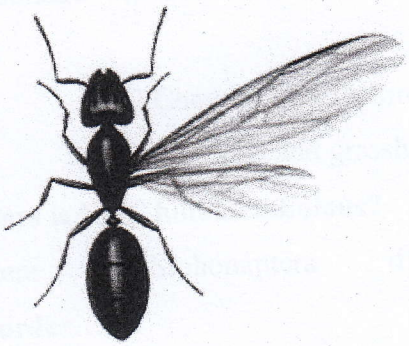


A
31) O. of A:
CN of A



B
O. of B:
CN. of B:

With my Best wishes

By Dr. Ali Mohamed Ali Mahmoud