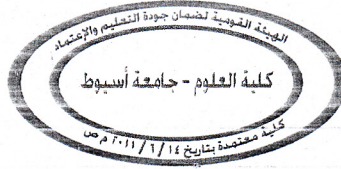




Zoology Department



قسم علم الحيوان

Final Exam: Experiment Design & Insect Rearing (352E) (Time: Two hour)

Answer the following questions:

Question no 1 (10 points): Define the following:

- a- Science
- b- Experimentation
- c- Confounding factors
- d- Fact
- e- Factorial (2^k) designs

Question no 2 (10 points): Compare between the following:

- a- Independent vs. dependent variables.
- b- Scientific theory vs. scientific law.
- c- Objective vs. subjective.
- d- Basic vs. applied research.
- e- Accuracy vs. precision.

Question no 3 (10 points):

- a- Which are of the following Good Hypotheses and Untestable Hypotheses?
 - 1- Cactus spines reduce herbivory.
 - 2- UVB radiation causes adult deformities in insects.
 - 3- House flies are more moral than Honeybees.
 - 4- Butterflies are smarter than beetles.
 - 5- Insecticides affect insect behavior and growth.
- b- Write down initial steps for learning how to rear high quality insects and steps for insectary operation.

Question no 4 (10 points):

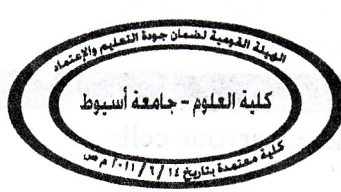
- a- How to think like a scientist? Write down processes for the scientific method.
- b- Give some examples of the frequently encountered bias and the ways do help us to overcome some of them.

Question no 5 (10 points):

- a- What is Scientific Writing? Summarize essential parts of a scientific paper.
- b- Why scientific argumentation? When should students use arguments? Reasons scientists use arguments.

Good luck

Amer I. Tawfik



Assiut University
Faculty of Science
Zoology Department

Summer Semester Final Exam
29/8/2016

Time: 2 hour
Level: Third
Course Code: 318Z

Answer the following questions (50 marks)

I: Choose the best single correct answer (10 marks)

1. In which phase of the cell cycle is DNA replicated?
a) G1 phase b) S phase c) M phase d) G2 phase
2. DNA backbone refers to
a) Sugar – Phosphate – Nucleotide b) Repeated sugar phosphate
c) DNA double helix d) Polynucleotides
3. A/ anis formed of fibrous protein.
a) Microtubule b) Microfilament c) Intermediate filament d) Glycolipid
4. A cell organelle, which is involved in synthesis of lipids
a) Golgi apparatus b) Nucleolus
c) Endoplasmic reticulum d) Mitochondrion
5. Ribosomes consist of
a) Protein and rRNA b) Protein and tRNA c) Protein and mRNA
6. An enzyme, which joins Okazaki fragments to form the lagging strand during DNA replication
a) Helicase b) Polymerase c) Ligase d) Primase
7. Purine nitrogenous bases are
a) A and G b) T and C c) A and T d) G and C
8. The head of a phospholipid molecule is.....
a) Hydrophobic b) Hydrophilic c) Neutrophil d) Hydrostatic
9. Which represents the correct sequence of stages in the cell cycle?.....
a) G1, G2, S, M b) G1, G2, M, S
c) M, S, G1, G2 d) G1, S, G2, M
10. Mitochondria are self-replication organelle due to.....
a) The presence of cristae b) The presence of their own DNA
c) The ability to produce energy (ATP) d) Cellular respiration

II: Write short notes on the following (18 marks)

1. Differences between prokaryotic and eukaryotic cells
2. Steps of transcription
3. Functions of the cell membrane
4. Differences between membranous and nonmembranous organelles
5. Differences between Meiosis I and Meiosis II
6. Explain with drawing structure of a mitochondrion

III: Define the following terms (9 marks)

1. Cell coat
2. 5' Cap in mRNA (with function)
3. Primase in DNA replication
4. DNA nucleotide
5. Primers in DNA replication
6. Codons in protein translation

IV: Complete the following sentences (10 marks)

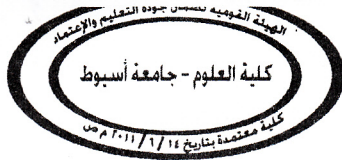
1. A phase which accounts 90% of the cell cycle
2. A cell organelle in which hereditary information are stored.....
3. A mitotic cell division phase in which the centromeres divide, result in separating the sister chromatids.....
4. A single specific sequence of nucleotides that is recognized by the replication enzymes and at which replication starts.....
5. A membrane-bounded sac of enzymes that digests macromolecules.....
6. The package that formed from a condensed, coiled and folded chromatin.....
7. Division of cytoplasm in cell division.....
8. A specific short sequence on DNA at which RNA polymerase attaches and initiates transcription at the beginning of the transcription unit.....
9. A part of meiosis in which sister chromatids are separated.....
10. A type of endocytosis in which cells engulf solid material

V: Answer the following question. (3 marks)

DNA sequence : 5' ATG TTA GGC CAA GTT AAT GGT AAT CCG 3'

- 1- Transcribe this sequence.....
- 2- How many codons are present in this sequence.....
- 3- If this sequence is transcribed and translated how many amino acids will be translated?.....

**End of Questions
Best wishes**



Final Examination of (316 Z)

Time :2Hours

1-6-2016

Marks:50

Q1-Put true or false and correcte the false in the followings:-

(Marks:30)

- 1-Lipids are less soluble in fat than fat solvents.
- 2-IN - HCL at 60C used for oxidation of purine basis for detection of DNA.
- 3-1% N-HIO₄ at RT used for oxidation of polysaccharides .
- 4- Chromophoric groups of stain give the color to the dyes such as quinoid ring & azo (-N=N)
- 5-Lead citrate &Osmium tetroxide are used to increase contrast between cellular components in EM.
- 6-Autoradiographic techniques used to follow cell activities and dynamics.
- 7-Metachromasia used to detect polymers with maximum (.o4nm) regular space between its units.
- 8-Plasmalogen of the brain can detected after treated with UV and Schiff's reagent.
- 9-Hydrolysis of DNA useing Hot 1- NHCL liberated which liberate (HOH) groups.
- 10-Protein and Bacteria can be detected immunocytochemically.
- 11- Sulphated acid mucopolysaccharides give negative results with metachromatic stain.
- 12-Lecithin stained with Sudan black give (+V) metachromasia under LM.
- 13-Glucosamine is normal glucose unit with NH₂ group attached to the carbon atom number (2).
- 14- Glutaraldehyde is used as secondary fixative in electron microscopy(EM).
- 15-Specific Antigen consists mainly of proteins, glycoprotein, polysaccharides.
- 16- Labeled fluorochromes includes fluorescein, rhodamine and toudine blue.
- 17- Fluorochromes means florescence substances visible by florescent microscope.
- 18- Tritiated atoms mean unstable atoms emit beta-ray's.
- 19-Basophilia of nucleus depends upon the presence of (PO₄) groups.
- 20-Fat depots are mainly neutral lipids'.
- 21- Feulgen reaction is cytochemical stain.
- 22-Frozen section can be done using liquid nitrogen or carbon dioxide.
- 23-supra-vital staining means staining done inside the body.
- 24-Permenant lipids are the structured lipids.
- 25- Saliva and diastase can work at RT.

Q2- Mention six items of main factors affects on fixative.

(Marks:3)

Q3-Compare between glucose & Pentose sugar (Chemical formula and method of detection)

(Marks:2).

Q4- Rearrange the followings steps in histological tissue processing we start gradually with :-

(Marks:2)

(A)Fixation (B)Dehydration –embedding (C)Stain (D) Sacrifice the animals

(E)Sectioning and mounting (F) choose the samples or organs. (G) Investigate under microscope.

Q5- What means by, glycoprotein that are produced by plasma cells and used by the immune system to identify and neutralize foreign objects(antigens).

(Marks:1)

Q6- Why we use labeled antibodies & Mention different types of labeled in immunocytochemistry.

(Marks:2).

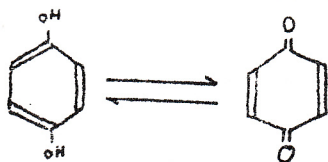
Q7-Write the basic idea of the following reactions:

(Marks:2).

(A) coloration of lipids by Sudan black-(B)metachromasia- (C)Detection of (RNA) by autoradiographic techniques.

Q8- Answers the followings:-

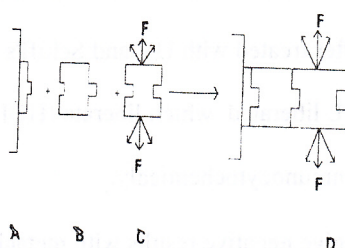
(Marks:8)



(Marks: 2)

Mechanism of.....

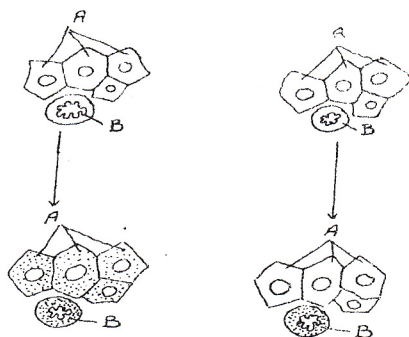
Write the name of two figure



(Marks:4)

Mention the name of this technique .

Write the name of letters.



(Marks: 2)

What the difference between two mechanisms?

Good Luck

H.S. ABDEL-Tawab



Assiut University
Faculty of Science
Department of Zoology

Academic Year 2015/2016, Second Semester
Course Title: Physiology (2)
Code Number: 310Z
Total marks: 50

Answer on the following:

I- Choose the correct answer (10 marks):

1-The period of hormone action depends on:

- a- the rate of release b-the rate of delivery c-the rate of its breakdown or clearance d- all of the above

2- The principal connection between the cerebral hemisphere is the

- a- corpus callosum b- pons c- vermis d-precentral gyrus

3- Which of the following is NOT descending motor tract

- a- tectospinal tract b- reticulospinal tract c- vestibulospinal tract
d- fasciculus gracilis

4- Parasympathetic ganglia are located

- a- in a chain parallel to the spinal cord b- in the dorsal roots of spinal nerves
c- next to or within the organs innervated d- in the brain

5-Which is NOT found in biological membrane

- a- G-proteins b-steroid receptors c- lipids d- proteins

6-When the lining of the uterus breaks down and is shed this is known as

- a- ovulation b- fertilization c- menstruation d- all of the above

7- Cutaneous receptor sensitized for deep and heavy pressure detection is the

- a- hair root plexus b-pacinian corpuscle c- Ruffini' end organ
d- free nerve ending

8- The hormone primarily responsible for setting the basal metabolic rate and promoting the maturation of the brain is

- a- cortisol b- ACTH c- TSH d- thyroxine

9- Which cranial nerve is responsible for the eye movement?

- a- Oculomotor b- vagus c- trigeminal d- olfactory

10- Gap junction in the intercalated discs of cardiac muscle allows the rapid passage of what?

- a- water b- calcium c- action potential d- oxygen

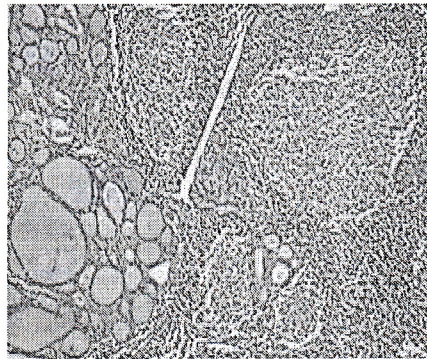
See Next Page

II- Answer on **Five** only of the following (25 marks, 5 marks each)

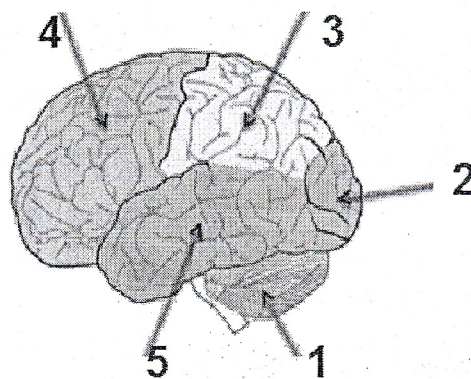
- 1- Explain the statement: The effect of opening sodium ions channels is stimulatory, while the effect of opening chloride ion channels is inhibitory.
- 2- Discuss the two causes of deafness.
- 3-How do sympathetic and parasympathetic nervous system differ from one another?
- 4- Physiological functions of progesterone in female.
- 5- Discuss the hormonal control of spermatogenesis.
- 6- Types and functions of the non-neural cells of nervous system

III- With labeled diagram shows the structure of taste bud and the mechanism of taste transduction in taste sensory cells. (5 marks)

IV-Write a comment on the following figure. (5 marks)



V- Labeled the following diagrams with the function of each part (5 marks).



Good Luck?



June, 2016

(1) Choose the correct answer: (15 Marks)

1- What is the common between somatopleure and splanchnopleure:

- a- Ectoderm b- Endoderm c- Mesoderm d- Ectomesoderm

2- The chorion is composed of:

- a- Cytotrophoderm b- Syncytial trophoblast
c- Ectoderm and mesoderm d- All these

3- Region of area pellucida without mesoderm:

- a- Preamnion b- Postamnion
c- Proamnion d- Mesoamnion

4- Cleavage in Amphioxus is:

- a- Discoidal b- Unequal holoblastic cleavage
c- Meroblastic d- Equal holoblastic cleavage

5- Yolk sac placenta is found in:

- a- Rabbit b- Kangaroo c- Man d- Rat

6- The ova of mammals are:

- a- Alecithal b- Isolecithal c- Mesolecithal

7- Cells of Rauber are found in:

- a- Amphioxus b- Toad c- Chick d- Rabbit

8- Primitive streak is not found in:

- a- Birds b- Fish c- Mammals

9- In rabbit morula develops in fluid filled ball called:

- a- Coeloblastula b- Trophoblastula
c- Blastocyst d- Gastrula

10- Which of the following is not found during development of Amphioxus:

- a- Coelom b- Blastocoel c- Embryonic membranes

(2) Match the following:

(10 Marks)

Column A	Column B
1-Skeleton	A-Sperm
2- Acrosome	B-Splanchnopleure
3- Neural crest	C-Further sperms
4- Primary egg envelop	D-Reptilia
5- Human placenta	E- Vitelline membrane
6-Ovoviviparity	F- Endoderm
7-Epipoly	G-Ectoderm
8-Polyspermy	H-Mesoderm
9-Parthenogenesis	I- Deciduate
10-Allantois	J- Division and spreading
	K-Indeciduate
	L- Unfertilized eggs

(3) Differentiate between the following:

(15 Marks)

- A- Invagination and Involution.
- B- Neurenteric canal and neurocoel.
- C- Area opaca and area pellucida.

(4) With the help of series of diagrams only, explain the various types of blastula found in chordates

(5 Marks)

(5) Mention whether each of the following statements is true (T) or False (F):

(5 Marks)

- 1- Golgi apparatus plays a role in the formation of cortical granules lying above the plasma membrane.
- 2- Meroblastic cleavage occurs in rabbit.
- 3- The main characteristic feature of the gastrula is the formation of three germinal layers.
- 4- During spermiogenesis the nucleus becomes elongated.
- 5- Development of fertilized egg starts with meiotic division.

Best wishes

Prof. Dr.Abddallah B. Mahmoud



June 2016

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

A- Fill in the blanks: (10 marks)

- 1- Infection with *Trichocephalus trichiurus* is due to but infection with *Ancylostoma doudenale* is due to
- 2- *Amoeba proteus* lives inbut *Entamoeba gingivalis* lives inthey feed mainly on.....
- 3- Adult worms of *Wuchereria bancrofti* occur inthey transmitted by.....and their adult female laying larvae termed.....
- 4- The second intermediate host of *Heterophyes heterophyes* isand that of *Diphyllbothrium latum* is

B- Choose the one correct answer: (5 marks)

- 1- *Lymnaea cailliaudi* snail is intermediate host of (*Schistosoma haematobium*, *S. mansoni*- *Fasciola hepatica* –none of them)
- 2- *Taenia saginata* is the cestode parasites, to complete its life cycle requires (three host- four hosts- five hosts - none of them)
- 3- *Trypanosoma* vectors is (male *Anopheles* - house fly - sand fly – *Pulex irritans* - none of them)
- 4- Man acts as a intermediate host in (*Taenia saginata* – *Entamoeba histolytica* - *Heterophyes heterophyes* – *Balantidium coli* - none of them)
- 5- Auto-infection, could be propagated by (*Ascaris* sp. – *Encylostoma* sp.- *Taenia saginata* –*heterophyes heterophyes* - none of them)

C- Put a suitable(√) or (X) adjacent to the following: (15 marks)

- 1- Trophozoite is a stage of protozoan which can ingest food ()
- 2- Metacercaria are encysted cercariae without tails ()
- 3- Final host, is the host harbouring sexual forms of Protozoa ()
- 4- Infective stage of *Trichomonas hominis* is trophozoite ()
- 5 - Oocyst is the zygote after the formation of the cyst wall ()

----- انظر خلفه -----

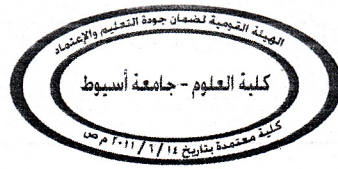
- 6 - Infection of *Taenia saginata* occurs through ingestion of larval forms in undercooked beef. ()
- 7 - Zoonoses, are the diseases transmissible between man and other animals ()
- 8 - Infective stage of *Entamoeba histolytica* is trophozoite ()
- 9 - Infective stage of *Ascaris* sp. is cysticercoid larvae ()
- 10- Redia stage is present in *Schistosoma* sp. ()
- 11 - The insect vectors of *Plasmodium* sp. is male anopheles ()
- 12- *Trichomonas tenax* lives in human intestine ()
- 13- Chagas disease is caused by *Trypanosoma rhodesiense* ()
- 14- Infective stage of *Fasciola gigantica* is cercariae ()
- 15- Infective stage of *Entamoeba coli* is quadrinucleated cysts ()

D- Write briefly on the following: (20 marks)
 (illustrating your answer with labeled drawings whenever possible)

- 1-Life cycle of one of the intestinal nematodes.
- 2-Sexual cycle of *Plasmodium* sp. in stomach of mosquito.
- 3- Types of cercariae in different species of trematoda.
- 4- Prevention & control of *Schistosoma* sp. (Bilhariza).
- 5-Sources of parasitic infection.

.....

Good luck
Prof. dr., Gamal H. Abed



Assiut University
Faculty of Science
Zoology Department

Third year Exam (Zoology)
Course name: Vertebrate 2
Course code: (330-Z)
Time: 2 hours

Answer the four following questions

Question 1: (20marks)

- **Choose the single response that is the correct answer of the following.**

1. Amniotic vertebrates include.

- a) Reptiles and Amphibian
- b) Fish and birds
- c) Reptiles and birds only
- d) None of the above.

2. Avian kidneys are

- a) Pronephros
- b) Mesonephros
- c) Metanephros

3. The stem of reptiles

- a) Archosauria
- b) Archaeopteryx
- c) Captorhinomorpha
- d) Salposuchus

4. Lepidosauria is characterized by

- a) Diapsidian skull
- b) Parapsidian skull
- c) Diapsidian derivative

5. Jaws bear epidermal teeth in

- a) Reptilia
- b) Aves
- c) Mammals

6. Archosauria includes

- a) Lizards
- b) Snakes
- c) Turtles
- d) Crocodiles

7. Diaphragm exists in

- a) All Reptiles
- b) Crocodiles only
- c) Birds
- d) Mammals and crocodiles

8. The avian fundus portion of the stomach secretes

- a) Hydrochloric acid
- b) Mucous
- c) Mucous and Hydrochloric acid
- d) Pepsin and hydrochloric acid

9. Water retention for reptiles have been done in

- a) Coprodaeum
- b) Urodaeum
- c) Intestine

10. The anapsid skull is a characteristic of

- a) All Reptiles
- b) Birds and mammals
- c) The first reptiles and later turtle

11. The method of respiration in reptiles is

- a) Aspiration
- b) Positive pressure pumping
- c) Air sacs

12. The two ventricles are separated in

- a) All reptiles
- b) Lizards
- c) Crocodiles

13. Which of the following is untrue in reptilian skin

- a) Horny scales
- b) Has glands
- c) Has claws
- d) Has sweat glands

14. Accessory cranial nerve in amniotes are

- a) Optic and oculomotor
- b) Trigeminal and auditory
- c) Spinal accessory and hypoglossal
- d) Olfactory and Trochlear

15. Head movement on the reptilian trunk is due to

- a) The flexibility of their vertebrae
- b) Modification in cervical vertebrae
- c) Will built of the pectoral girdle

16. Air frequency transmit to the receptor in mammals by.

- a) Hyomandibular
- b) Outer ear
- a) Middle ear

17. Snakes swallow big prey because

- a) Its big mouth
- b) Have strong tongue
- c) Its streptostylic skull

18. Birds feed their young by milk secretion

- a) Columbiforms
- b) Passeriforms
- c) Charadriiforms
- d) Falconiforms

19. The back of body is covered by bony scales in

- a) Bat
- b) Kangaroo
- c) Armadillo
- d) Elephant

20. In Marsupialia, the communication of the embryo with the mother is through

- a) Umbilicus
- b) Uterus
- c) Chorioallantois placenta

Question 2:

(5 marks)

- **Fill the spaces, no commentary needed**

1. Two characters of the flightless birds; 1).....
2).....
2. Reptilian lower jaw bones are.....
.....
3. Three avian keratinized structures
..... and
4. Feather may performand
5. Muscle emerges....., while bone represent.....

Question 3:

(15 marks)

- **Describe two items of the following**

- A- The reptilian hyoid system
- B- The avian brain
- C- Human heart
- D- The middle ear

Question4:

(10 marks)

- **Compare between the arterial system of reptile, bird and mammals.**

Please notice that the exam occupies two pages

Answer the following questions:

Q1- Choose the correct answer from *a, b* or *c*: (10 marks)

- 1) The cabbage white butterfly, *Pieris brassicae* is
 - a) monophagous
 - b) oligophagous
 - c) polyphagous
- 2) Compared to old plant leaves, the young leaves are generally
 - a) more toxic to insects
 - b) less nutritious to insects
 - c) more tough
- 3) The formation of gall by gall-producing plants as a result of insect attack is a
 - a) defensive response
 - b) passive response
 - c) accidental response with no function
- 4) Oligophagous insects feed on plant species belonging to the same plant family because
 - a) oligophagous insects are plant taxonomists
 - b) plants of the same family contain similar nutrient profiles
 - c) plants of the same family grow in the same place
- 5) Extrafloral nectar in cotton plants is produced
 - a) only after insect feeding on leaves
 - b) naturally but its production increases as a result of insect feeding on leaves
 - c) naturally and its production rate does not change by insect feeding
- 6) Small insect species are generally more specialized than larger ones because large species
 - a) need more food
 - b) are very choosy
 - c) cannot move quickly
- 7) Feeding on insects by plants is
 - a) obligatory
 - b) rare
 - c) wide spread
- 8) Neural representation of host plant characteristics is necessary for host plant
 - a) acceptance
 - b) recognition
 - c) selection

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

<<< continued from the previous page

- 9) Traps of insectivorous plants are mostly modified
- a) leaves
 - b) flowers
 - c) buds
- 10) The epicuticular wax layer on plant leaves is formed
- a) as a response to herbivore attack
 - b) as a reaction to insect saliva
 - c) naturally

Q2- Define *five only* of the following terms: (10 marks)

- | | | |
|-------------------------|---------------------------|---------------|
| 1) Repellents | 2) Extrafloral nectar | 3) Arrestants |
| 4) Green leaf volatiles | 5) Haustellate mouthparts | 6) Host range |

Q3- Answer *three only* of the following: (15 marks)

- 1) Write an account on an insectivorous plant with active trap.
- 2) Compare between "primary" and "secondary" plant metabolites, giving one example indicating that insects can make use of both.
- 3) Explain how plants with trichomes can be either suitable or not suitable for herbivores.
- 4) Describe the patterns of penetrating plant tissues by the mouthparts of membracids, aphids and planthoppers, mentioning their target feeding sites.

Q4- Write a brief account on *three only* of the following: (15 marks)

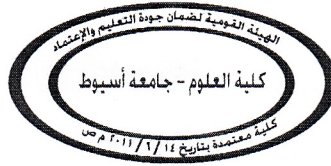
- 1) The significance of plants as microhabitat providers to insects
- 2) Influence of plants on the reproduction of herbivore insects
- 3) Interaction between aboveground and belowground herbivory in enhancing plant resistance
- 4) Behavioral tactics of insects to circumvent plant resistance

————— End of questions ————— Good luck! —————

Examiner: Prof. Dr. Medhat M. Sadek



Assiut University
Faculty of Science
Zoology Department



Second Semester Final Exam of
Aquatic Entomology Course



Time: 2 hour
Level: Third

Answer the following questions (50 marks)

I: Define the following: (12 marks)

- a- Hydrofuge structures
- b- Shredders in aquatic insects
- c- Poikilotherms
- d- Branchial chamber
- e- Heat shock proteins
- f- Cryoprotectant
- g- SCP
- h- Osmoregulator aquatic insects

II: Write briefly on: (18 marks)

- a- Body-based filter feeding in aquatic insects.
- b- Open and closed tracheal system in aquatic insects.
- c- Discriminate between larvae of Zygoptera and Anisoptera in terms of gas exchange related structures.
- d- List 4 morphological adaptations and behaviors to maximize cutaneous gas exchange in aquatic insects.
- e- Blood based gas exchange in aquatic insects.
- f- Behavioral and physiological thermoregulation in aquatic insects

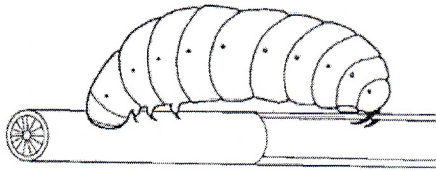
III: Mark (T) for true sentences and (F) for false and correct false sentences (correct false) (7 marks)

- a- Adult Plecoptera are always terrestrial ()
- b- In freshwater aquatic insects, the body fluids are hypertonic to the surrounding water ()
- c- Plastron is a permanent compressible gas gill in aquatic insects ()
- d- Naiads and adults in Ephemeroptera have 3 styli ()
- e- In the aquatic Neuroptera, the number of larval instars is 10-33 ()
- f- Sclerotized respiratory horns are present in larvae of aquatic Lepidoptera ()
- g- Aquatic insects tolerate extreme cold through production of waxy layer on their exoskeleton ()

IV: Complete the following sentences

(5 marks)

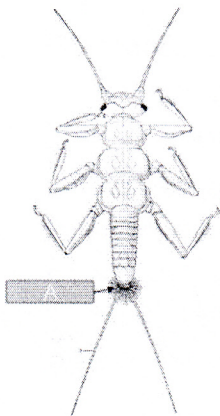
- a- Gas stores in aquatic insects are located in.....
- b- In terms of feeding habits, predators can be divided into
and.....while in terms of feeding strategies they might be
either or.....
- c- Challenges faced by aquatic insects which are completely
dependent on atmospheric air areand.....
- d- In the following diagram, indicate one modification to aquatic life
by the aquatic beetle *Donacia*.....



- e- Forlegs in predatory aquatic insects are modified for

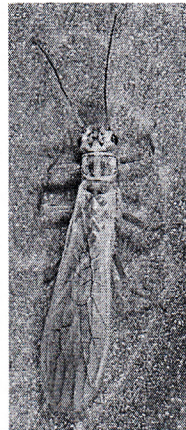
V: Answer the following question

(8 marks)



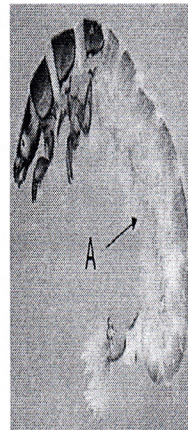
(1)

- a- Order name :
- b- Label A:
- c- Type of
tracheal system



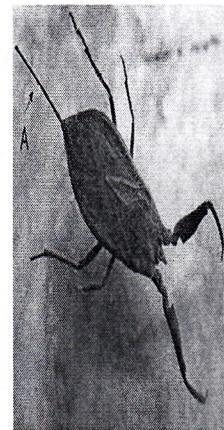
(2)

- a- Order name :
- b- Terrestrial or
aquatic adult?



(3)

- a- Order name :
- b- Label A



(4)

- a- Order name :
- b- Family name :
- c- Label A

With our best wishes

Dr. Ahmed Mostafa

Answer the following questions:

(50 marks)

I- Write the scientific term of the following statements:

(10 marks)

1. A group of organisms born at the same time. (.....)
2. The movement of organisms into a population. (.....)
3. An interaction between two species where one organism benefits and the other experiences a decrease in growth, reproduction, or survivorship. (.....)
4. The study of changes in the size and composition of populations, and the factors influencing these changes. (.....)
5. One animal attached to another exclusively for transport. (.....)
6. Individuals of different species compete for the same resource. (.....)
7. Branch of science deals with the array of ecosystems and their arrangement in a geographic region. (.....)
8. The total number of organisms in the population. (.....)
9. All environmental factors which limit the growth of populations (.....)
10. A group of spatially separated subpopulations connected by active exchanges of individuals among subpopulations. (.....)

II- Choose the correct answer and also write its letter in the answers table below:

(20 marks)

1- The statistical study of populations is called

- | | |
|---------------|---------------|
| A) density | B) dispersion |
| C) demography | D) fecundity |

- 2- Which distribution pattern does territoriality produce?
- A) Random
B) Uniform
C) Clumped
D) None of the above
- 3- means a community plus the nonliving factors with which it interacts.
- A) Population
B) Ecosystem
C) Landscape
D) Both A and B
- 4- is a release of chemical substances by plant species that inhibit the growth of another.
- A) Allelopathy
B) Autotoxicity
C) Antibiosis
D) Both A and B
- 5- One of the following is not related to the others.
- A) Phoresy
B) Metabiosis
C) Inquilinism
D) Mutualism
- 6- Which one of the following is NOT a density-dependent factor.
- A) Competition
B) Predation
C) Parasitism
D) None of the above
- 7- The growth rate of a population slows as intraspecific competition becomes more
- A) intense
B) poor
C) weak
D) None of the above
- 8- is a relationship between two organisms where one is harmed while the other is unaffected.
- A) Commensalism
B) Mutualism
C) Amensalism
D) Parasitism
- 9- The mortality rate of organisms following a type III survivorship curve is
- A) constant throughout life
B) higher in post-reproductive years
C) lower after the organisms become established
D) unrelated to age
- 10- What type of survivorship curve do humans have?
- A) Type I
B) Type II
C) Type III
D) Type IV
- 11- competition occurs when a resource is inadequate for the needs of all individuals.
- A) Intraspecific
B) Exploitative
C) Apparent
D) Scramble

12- The number of individuals per unit area determines the population's

A) survivorship

B) density

C) mortality

D) age distribution

13-is an association between two organisms in which one organism is unaffected while the other is damaged or killed by a chemical secretion

A) Antibiosis

B) Mutualism

C) Commensalism

D) None of the above

14- Which of the following factors will affect population growth rates?

A) net emigration

B) net immigration

C) birth rate

D) all of the above

15- One of the following is Not related to the others

A) Predators

B) Prey

C) Pathogens

D) Parasites

16- What type of population associated with age pyramid which has an extremely broad base?

A) a rapidly expanding population

B) a stable population

C) a population where the birth rate = the death rate

D) a population with more males than females

17- Choose the factor that limits population growth.

A) predation

B) harsh weather

C) disease

D) All are factors that could limit population growth

18- One of the following is Not a result of intraspecific competition.

A) Stress

B) Dispersal

C) Constant loss

D) Social interactions

19- All factors which limit the growth of populations

A) environmental resistance

B) Biotic Potential

C) population growth

D) Both A and B

20- The age distribution of a population reflects its

A) history of survival

B) reproduction

C) potential for future growth

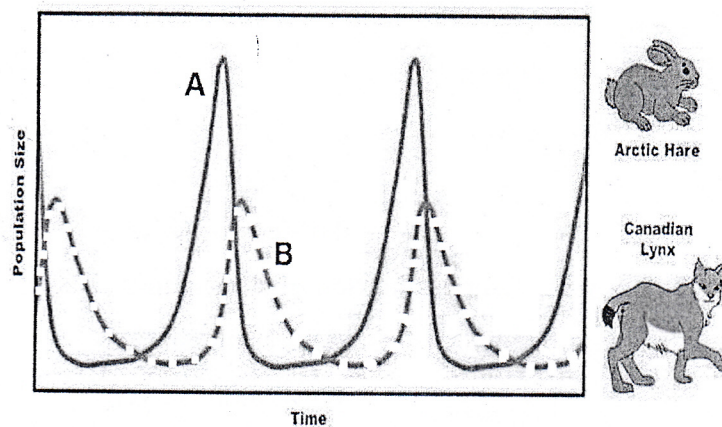
D) all of the above

Answers table

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Answer																				

III- Answer **ONLY FIVE** questions of the following: (20 marks)

1. The following graph shows the relationship between prey population density and predator population density over an extended period of time.



- The solid line A represents population while the dotted line B representspopulation.
- An increase in density results in a straight-forward increase in population size.
- Predator-prey relationships are

2. Complete the following table to show the differences between 'r' and 'K' selection species

	r-selected species	K-selected species
Mortality		
Survivorship		
Population size		
Length of life		

3. In a mark – recapture study of Woodlice (Isopoda) population, A total of 500 were marked. 24 hours later, woodlice were collected again in the same place. This time 300 were found, of which 100 were seen to be already marked from the first time. What approximately, is the estimated population size of woodlice in this area?

.....

.....

.....

.....

4. The parasite has a potential effect on the population dynamics of the host "show that"

.....

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5. Illustrate the important aspects of life histories

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Answer the Following Questions (50 Marks)

الإجابة في نفس ورقة الأسئلة عدا السؤالين الأخيرين يُجابا في كراسة الإجابة المُعطاة لك.

I- Complete the following sentences: (10.5 Marks)

- 1- Among malaria vectors in Europe, North Africa and the Middle East are:
(a) (b) (c)
- 2- Phenomenon of transovarial transmission of pathogens is noticed in the following diseases:
(a) (b)
(c) (d)
- 3- Female tsetse flies lay one at a time.
- 4- In African yellow fever, the main vector in urban cycle is the, while in sylvatic cycle the main responsible vector is
- 5- In tsetse flies after taking a blood meal; trypanosomes are multiply in the
- 6- House flies can transmit variety of pathogens via the following routes:
(a) By
.....
(b) By
.....
(c) By
.....
- 7- The infective stage in flariasis is
- 8- Myiasis can be classified into:
(a) (b) (c)
- 9- Body lice can transmit different types of pathogenic bacteria to human as which is the causative agent of, and that is the causative agent of, and also can transmit the causative agent of
- 10- In Japanese encephalitis; the principle reservoir host is, while the amplifying hosts is

11- When myiasis affects the following organs, give the suitable scientific name for each case:

- (a) Eyes:
(b) Intestine:
(c) Burrowing just underneath the surface layers of the skin:
(d) Nose:

12- Fleas of genus can transmit cestodes to human, while *Xenopsylla sp.* can transmit pathogen called that cause a disease named and can transmit another pathogen called which is the causative agent of disease.

13- Sand fly can transmit a bacterium called, that is causative agent of disease.

14- The main types of plague are, and

II- Correct the incorrect sentences of the following: (5 Marks)

1- *Musca domestica* transmit pathogens biologically to human. ()

2- No arboviral diseases could be transmitted to human by Anopheline mosquitoes. ()

3- Only female tsetse fly can transmit disease to human. ()

4- Once *Anopheles sp.* mosquito becomes infective it remains so throughout its life. ()

5- The mosquito salivary glands are involved in transmission of filariasis. ()

III- Carefully read and mark the INCORRECT answer: (5 Marks)

1- Tsetse flies are vectors of African trypanosomiasis.

- (a) The resulting disease is known in human as "sleeping sickness".
(b) Tsetse flies transmit African trypanosomiasis to human.
(c) The resulting disease is known in both human and animals as "sleeping sickness".
(d) Tsetse flies transmit African trypanosomiasis to animals.

- 2- The following dipteran species cause obligatory myiasis:
- (a) *Lucilia sericata* (Greenbottles). (b) *Cordylobia anthropophaga* (tumbo fly)
(c) *Wohlfahrtia magnifica*. (d) *Chrysomya bezziana* (Old world screwworm)
- 3- Sleeping sickness is resulted from infection with:
- (a) *Trypanosoma brucei gambiense*. (b) Tsetse flies.
(c) *Trypanosoma brucei rhodesiens*. (d) *Trypanosoma cruzi*.
- 4- *Aedes aegypti* considered as vector for the following diseases:
- (a) Chikungunya. (b) Lymphatic flariasis. (c) Dengue fever. (d) Yellow fever.
- 5- Tritomine bugs can transmit pathogen of Chagas disease to human through:
- (a) Only females. (b) Only males.
(c) Both sexes. (d) Both sexes and immature stages.

IV- What is the scientific meaning of: (5 Marks)

1- Residual spraying:

.....
.....
.....

2- Obligatory myiasis:

.....
.....
.....

3- Biological transmission:

.....
.....
.....

4- Mechanical transmission:

.....
.....
.....

5- Zoonosis:

.....
.....
.....

* Answer the following two questions in the separate answer sheet.

V- Mention in brief the possible mode of transmission of the following pathogens to human? (10 Marks)

- 1- *Yersinia pestis*.
- 2- *Leishmania*.
- 3- *Trypanosoma cruzi*.
- 4- *Rickettsia prowazekii*.
- 5- *Trypanosoma brucei rhodesiens*.

VI- Write short notes on the following: (14.5 Marks)

- 1- Physical and mechanical control of house flies. (3 marks)
- 2- Control of house flies through environmental sanitation. (2.5 marks)
- 3- Maggot therapy. (2 marks)
- 4- Control of body lice. (3 marks)
- 5- Control of fleas and rodent fleas. (4 marks)

With my cordial wishes,
Dr. Ahmed M. Korayem



Assiut University
Faculty of Science
Dept. of Zoology

Final Exam. of Cell Biology (312Z) for Zoology Students

June 2016

Time 2 hours

I- Fill in the spaces

(15 Marks)

- 1- Growth factors include substances whichmany of the actions of hormones.
- 2- The most efficient DNA repair going on in.....
- 3- The immune system usesto destroy bacteria and other pathogens.
- 4- SOD converts an oxygen radical known as superoxide anion into ,.....
- 5- In a process called, glucose molecules attach themselves to proteins.
- 6- The centromeres remain intact in
- 7- Every chromosome has tails at its ends that get as a cell divides.
- 8- The progressive deterioration of many bodily functions over time is called:
- 9- One of the genes that control a special stage in the worm's development called dauer formation known as:
- 10- The senescent cells continue to respond to hormones and other outside stimuli, but can't
- 11- The proliferative gene is thought to regulate the expression of other genes important in cell division.
- 12- The centromeres remain intact in
- 13- Apoptosis-inducing factor (AIF) is a protein that is normally located in
- 14- Meiosis is a special type of nuclear division which segregates one copy of each into each new cell.
- 15- In some tissues, such as, cell division ceases sometime after birth.

II- Choose the correct answer:

(12 Marks)

- 1- The hormone like chemical messengers that control the activities of the immunologic reaction cells is called: a) Interleukins b) Interferons c) Immunoglobulins
- 2- Cellular immunity is mediated by: a) B-lymphocytes b) T-lymphocytes c) Phagocytes
- 3- The immunoglobulin that crosses the placental barrier is: a) IgG b) IgA c) IgD
- 4- Which one of the following statements regarding B-lymphocytes is **TRUE**:
a) represent 75% of circulating lymphocytes b) represent 55% of circulating lymphocytes
c) represent 65% of circulating lymphocytes.

- 5- The stimulation and differentiation of B-cells into plasma cells is completed by:
 a) Killer cells b) Helper cells c) Suppressor cells
- 6- In cell population growth cycle, the phase in which the number of cells in the population no longer increase and may even decrease known as:
 a) death phase
 b) lag phase c) stationary phase
- 7- The sequence of activities exhibited by cells is called:
 a) mitosis
 b) cell division c) the cell cycle
- 8- The immunoglobulin that disappear immediately after its secretion is:
 a) IgA b) IgE c) IgG
- 9- Epstein-Barr Virus (EBV) which associated with some lymphomas produces a protein similar to:
 a) Bcl-2 b) Apaf-1 c) Bax
- 10- The lymphocytes that open holes in the foreign cells and lysis them are:
 a) Killer cells
 b) Helper cells c) T-memory cells
- 11- The Enzymes that do the unwinding the double-helical structure that makes up DNA called:
 a) duplicases b) helicases c) deamerases
- 12- Depending on its species, the animal's ability to repair certain types of DNA damage is directly related to:
 a) telomers b) genes c) the lifespan

1	2	3	4	5	6	7	8	9	10	11	12

III- Write the following data

(13 Marks)

A- Cells that are damaged by injury undergo a characteristic series of changes such as:

1-

2-

3-

B- Crosslinking interests gerontologists for several reasons these are:

1-

2-

3-

4-

C- Why mitochondrial DNA is injured at a much greater rate than nuclear DNA?

1-

2-

D- What role HSPs play in the aging process?

1-

2-

E- Why yeast, nematodes and fruit flies have attracted a lot of attention from gerontologists?

1-

2-

(10 Marks)

IV-Write on two only of the following:

1- Heat shock protein.

2- Hormone replacement.

3- Apoptosis and AIDS.



June 2016

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

A- Fill in the blanks: (10 marks)

- 1- Infection with *Trichocephalus trichiurus* is due to but infection with *Ancylostoma doudenale* is due to
- 2- *Amoeba proteus* lives inbut *Entamoeba gingivalis* lives inthey feed mainly on.....
- 3- Adult worms of *Wuchereria bancrofti* occur inthey transmitted by.....and their adult female laying larvae termed.....
- 4- The second intermediate host of *Heterophyes heterophyes* isand that of *Diphyllbothrium latum* is

B- Choose the one correct answer: (5 marks)

- 1- *Lymnaea cailliaudi* snail is intermediate host of (*Schistosoma haematobium*, *S. mansoni*- *Fasciola hepatica* -none of them)
- 2- *Taenia saginata* is the cestode parasites, to complete its life cycle requires (three host- four hosts- five hosts - none of them)
- 3- *Trypanosoma* vectors is (male *Anopheles* - house fly - sand fly – *Pulex irritans* - none of them)
- 4- Man acts as a intermediate host in (*Taenia saginata* – *Entamoeba histolytica* - *Heterophyes heterophyes* – *Balantidium coli* - none of them)
- 5- Auto-infection, could be propagated by (*Ascaris* sp. – *Encylostoma* sp.- *Taenia saginata* –*heterophyes heterophyes* - none of them)

C- Put a suitable(√) or (X) adjacent to the following: (15 marks)

- 1- Trophozoite is a stage of protozoan which can ingest food ()
- 2- Metacercaria are encysted cercariae without tails ()
- 3- Final host, is the host harbouring sexual forms of Protozoa ()
- 4- Infective stage of *Trichomonas hominis* is trophozoite ()
- 5 - Oocyst is the zygote after the formation of the cyst wall ()

----- انظر خلفه -----



Answer all the following questions:

Q 1: Choose the correct answer (one answer only): (10 marks)

1. Capsule is present in:
a)- animal cells
b)- all eukaryotic cells
c)- plant cell only
d)- plant cell and bacteria
2. Division of cytoplasm following the nuclear division is known as:
a)- cytokinesis
b)- cytokine
c)- cytolysis
d)- cytoskeleton
3. Phage lambda is:
a)- a type of bacteria that infect virus
b)- a virus that cause AIDS
c)- a virus used lysogenic and lytic cycles to infect bacteria
d)- a gram positive bacteria
4. A membrane-bounded sac contains enzymes that digest macromolecules is known as:
a)- ribosome
b)- lysosome
c)- central vacuole
d)- peroxisome
5. Each centriole is composed of:
a)- 9 doublets of microtubules
b)- 9 triplets of microtubules
c)- 9 triplets of microfilaments
d)- 9+2 triplets of microtubules
6. The interphase of the cell cycle has three subphases:
a)- G1-G2-G3
b)- G-S-G1
c)- G1-S-G2
d)- G1-S1-M
7. The cells that are used for preparation of an individual's karyotype are:
a)- all blood cells
b)- red blood cells
c)- white blood cells
d)- gametes
8. Crossing over is a process that occurs during:
a)- metaphase I
b)- metaphase II
c)- prophase I
d)- prophase II
9. The production of isoleucine from threonine by threonine deaminase is:
a)- allosteric activation
b)- allosteric inhibition
c)- feedback inhibition
d)- cooperatively regulation
10. The T. protein uses 3 molecules of ATP to pump:
a)- 2 K⁺ in and 3 Na⁺ out the cell
b)- 2 K⁺ out and 3 Na⁺ in the cell
c)- 6 K⁺ in and 9 Na⁺ out the cell
d)- 6 K⁺ out and 9 Na⁺ in the cell

باقي الاسئلة خلف الصفحة

Q2 Fill in the following sentences: (20 marks)

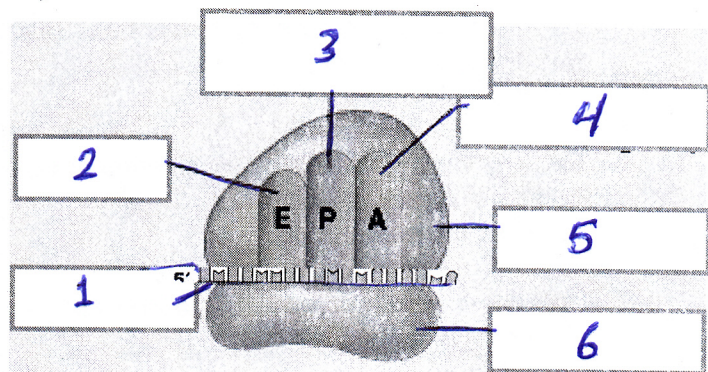
1. Each tRNA molecule arriving at the ribosome carries at one end and has a specific nucleotide triplet known as This tRNA exerts three functions which are:.....and.....
2. Proteins are the links betweenand
3. The three stages of translation are:.....and
4. Mutagens are defined as or.....agents that interact with.....to cause.....
5. Chromosomal aberration is common in meiosis and includesand
6. In animal cell, all the transcription occurs in the.....and translation occurs mainly at.....in the.....
7. In the three consecutive bases specify an amino acid.
8. The absence of dystrophin due to an X-linked disorder is known as.....

Q3 Provide the definitions of only five of the following: (10 marks)

- | | |
|--|------------------------|
| 1. The three mechanisms which contribute to genetic variation. | 2. Haemophilia. |
| 3. Klinefelter's syndrome. | 4. Cri-du-chat. |
| 5. Types of Base-pair substitution mutations. | 6. Replication bubble. |

Q4 Complete the following drawings and the associated labels: (10 marks)

A. Complete the following: (6 marks)



B. Draw two strands one if the process is DNA replication and the other if the process is transcription of mRNA. (4 marks)



GOOD LUCK

Dr. Gamal Badr, Professor of Immunology

Permanent Web site: http://www.aun.edu.eg/membercv.php?M_ID=393

e-mail: gamal.badr@aun.edu.eg