



Tanta University
Faculty of Science
Zoology Department

Final Exam. for Sophomores (2nd Year) students of Special Zoology

1969	Course title:	Ecological Adaptations	Course Code: ZO 2107	
Date:	20 / 3 / 2021	Semester: first	Total assessment Marks:150	Time allowed: 2 hours

Part 1 (Total 75 marks)

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First Question

A) Answer the following questions: (40 marks, 8 marks for each)

- 1- How does its body covering adapt the animal to its environment?
- 2- Describe adaptations of beaks and feet in Hummingbirds, Woodpecker, duck and owls.
- 3- What is camouflage? How does it different form mimicry?
- 4- Write short notes on adaptation of polar bear, golden eagle and ostrich.
- 5- What is the difference between hibernation & torpor?

Second Question

A) Fill in the blanks with the appropriate words: (15 marks)

- 1-is an adaptation in which the top and bottom sides of animal are two different colours.
- 2- Behavioral adaptation means
- 3- There is a thick layer of insulating fat in whales which protects them from colder water, this layer is known as
- 4- is an adaptation in which one animal imitates another animal
- 5- A chameleon changing colors to match its surroundings is an example of
- 6- Organisms can generally be divided into two types of thermoregulation &
- 7- Some animals present which allow them to survive ice formation in their bodies.

B) Choose the correct answer (20 marks, 2 marks for each)

- 1- Convergence of several unpalatable species called
A. Batesian mimicry B. Mullerian mimicry C. Automimicry
- 2- Dogs bark at strangers to protect themselves and their pack. What kind of adaptation is barking?
A. Playful B. instinctive C. learned D. hibernation
- 3- Ectothermic minimizing heat loss by.....
A. Convection B. Conduction C. Radiation & insulation D. All.
- 4- Behaviors that animals are taught are called behaviors.
A. learned B. adaptive C. instinct D. inherited
- 5- What type of adaptation is the production of venom by a poisonous snake?
A. structural adaptation B. behavioral adaptation C. physiological adaptation
- 6- A bear hibernates for the winter consider Adaptation.
A. Structural B. Behavioral C. Physical D. instinct
- 7- Suppose you place a potted plant on a sunny windowsill. A few days later you notice that the plant is bending towards the window. What kind of adaptation is this?
A. structural adaptation B. behavioral adaptation C. physiological adaptation
- 8- help the animal feel its way through tight spots.
A. Wings B. Eyes C. Whiskers. D. Sharp claws.

9- Which one of these behaviors does a tiger learn from its mother?

- A. migration during winter months B. how to hunt for food
C. how to change its stripe show to defend itself

10- The strong, muscular walls of the heart are an example of adaptation.

- A. structural adaptation B. behavioral adaptation C. physiological adaptation

Part II (75 marks)

Third Question (20 Marks)

Indicate whether the following statements true or false with the correction:

- 1- The speed of behavioral adaptation is directly related to the animal efficiency.
- 2- Wisdom teeth in humans is an example of vestigial organs.
- 3- The rapid acclimatization is related to flexibility.
- 4- Fitness is a measure of animal evolution.
- 5- Natural selection does not effect on the distribution of phenotypes in a population.
- 6- Desert animals posses behavioral adaptation to reduce respiratory water loss .
- 7- The regulation of body temperature is the problem face the desert animals due to dehydration .
- 8- In smaller animals panting is the most common method of cooling
- 9- The body temperature of hibernated species rises to decrease the need of food .
- 10- The heritability of animals that are not well adapted to an environment equal zero heritability .

Fourth Question (20 Marks)

Choose the correct answer.

1-An adaptation refers to:

- a. a non-inherited trait that makes organisms more fit in its environment.
- b. a non-inherited trait that makes organism more fit, as a result of the action of natural selection.
- c. a hereditary trait that makes an organism more fit in its environment, and that has arisen as a result of the action of natural selection.
- d. All of these

2-Consider the following scenario, and then choose the best response. Firecracker seed finches of Africa feed on either large or small seeds, and as a result have developed only large or small beaks. This is likely the result of which of the following?

Choose one answer.

- a. Directional selection
- b. Stabilizing selection
- c. Balancing selection
- d. Disruptive selection

3-Human infants with intermediate birth weights have a greater chance of survival than those with either higher or lower birth weights. This outcome is an example of _____ selection.

Choose one answer.

- a. directional
- b. stabilizing
- c. balancing
- d. disruptive

4-In natural selection.....

- a. Future offspring will have greater percent of individuals with favorable traits.

- b. The breed or population undergoes evolution over time.
c. Individuals with highest fitness will produce more offspring.
d. Individuals with otherwise low fitness might be able to reproduce.

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5-What type of selection is probably involved when organisms that exhibit one extreme of a trait distribution (such as height, weight, etc.) have a better chance of survival than those organisms exhibiting the opposite extreme of the same trait?

Choose one answer.

- a. Stabilizing selection b. Disruptive selection c. Balancing selection d. Directional selection

6-Which of the following best describes Darwin's theory of evolution?

- a. Natural selection requires a long time to lead to new species formation.
b. Darwin's views are no longer accepted by biologists.
c. Characteristics acquired during an individual's life are always passed on to future generations.
d. Darwin's theory incorporated Mendel's work on patterns of inheritance

7- Coevolution refers to which of the following?

- a. Species that live with one another b. Species that have a mutual evolutionary influence
c. Species that form fertile hybrids d. Species that have diverged from one another

8- A generalized animal eat..... (a range of – a specific type - highly specialized types) of food.

9-A heart (pumps blood - emits sound - aid to survive) that is its function.

10-Non genetic adaptations occur..... (more rapidly- more slowly - moderately) than genetic adaptation.

Fifth Question (35 Marks)

Give an account on:

- 1- Vestigial organs.
- 2- Adaptive evolution model.
- 3- Disruptive selection.
- 4- Why are humans exempt from natural selection?
- 5- Define: assortative mating- fecundity selection.
- 6- what is the difference between stabilizing selection and directional selection?

With our Best Wishes

EXAMINERS:	Prof.Dr. / Ensaf El-Sayed El-Gayar	Prof.Dr./ Lamiaa Abed El-Wahab Sharra
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Q1: CHOOSE AND WRITE THE LETTER OF THE CORRECT ANSWER IN YOUR ANSWER SHEET (50 points, 1 point each)

1) Introns make up what percent of the human genome?			
a. 1.5 %	b. 99 %	c. 46.5 %	d. 17.5 %
2) STRs, or short tandem repeats are useful for a DNA profile because —			
a. The repeated sequences are unique to each individual	The length of each repeated sequence is unique to each individual	b. The number of STRs in a person is unique	c. They are naturally fluorescent making them easy to visualize in the profile
3) Monoclonal antibodies are —			
a. Heterogeneous antibodies produced from single clone of plasma cells	b. homogenous antibodies produced from single clone of plasma cells	c. both a and b	d. none of these
4) The technology used for the production of monoclonal antibodies is —			
a. mass culture technology	b. Hybridoma technology	c. Monoclonal and Polyclonal Antibodies	d. suspension culture
5) Which of the following statements about monoclonal antibody production is true?			
a. B cell + hybridoma → myeloma	b. B cell + myeloma → hybridoma	c. B cell + spleen cell → hybridoma	d. T cell + hybridoma → myeloma
6) Unique patterns of repeated base sequences that are exclusive to individuals are called:			
a. sticky ends	b. restriction sites	c. polymorphisms	d. duplications
7) Combining DNA from 2 different organisms is called —			
a. Bioengineering	b. Biotechnology	c. Recombinant DNA	d. Genetic Engineering
8) What is the delivery of exogenous genetic material to animal cells, using a vector known as?			
a. Transformation	b. Translocation	c. Transduction	d. Conjugation
9) DNA finger printing relies on			
a. Difference in patterns of genes between individuals	b. Difference in order of genes between individuals	c. Difference in junk DNA patterns between individuals	d. All of these
10) Minisatellites are —			
a. 10-40 bp sized short sequences within the genes	b. Short coding repetitive regions on eukaryotic genome	c. Short Non-coding repetitive sequences present throughout the chromosome	d. Are regions of chromosomes after secondary constriction
11) Which of the following statement is incorrect regarding HAT selection			
a. B cells are HGPRT ⁺ and grow in HAT medium but undergoes normal cell death	b. Myeloma cells cannot grow in HAT medium as they are HGPRT ⁻	c. Hybrid cells survive in HAT medium as they inherits HGPRT from B cells	d. Aminopterin in HAT medium blocks <i>de novo</i> pathway of nucleotide synthesis only in myeloma cells
12) What enzyme is used during the process of fragmentation?			
a. DNA Polymerase	b. DNA Ligase	c. Reverse Transcriptase	d. Restriction
13) Which of the following describe a clone?			
a. the clone DNA is identical to the parent DNA	b. Clones can happen naturally	c. Clones can be made in labs	d. All are correct
14) An organism in which foreign genes have been incorporated is called a —			
a. recombinant organism	b. transgene recombinant	c. polymorphism	d. transgenic organism
15) What is a GMO?			
a. A genetically modified organism	b. An organism with altered DNA	c. An organism developed by scientists to have desired traits	d. All of the previous
16) Natural humoral immune response against a pathogen leads to the production of —			
a. polyclonal antibodies	b. monoclonal antibodies	c. macrophages	d. none of these
17) Which technology below would probably be the most important to a person who had diabetes and had to take insulin every day?			
a. Using rDNA to produce human hormones from bacteria	b. Testing parents for genetic disorders before they have children	c. Developing ways to identify criminals through DNA fingerprinting	
18) Which of the following enzyme is responsible for making a DNA copy from RNA?			
a. Reverse transcriptase	b. DNA polymerase	c. RNA polI	d. RNA polII
19) A — is required to transfer genes from one organism to another.			
a. vector	b. reverse transcriptase	c. transport molecule	d. genetic probe
20) What would have caused the plasmid (B) to open?			
a. restriction enzyme	b. ligase	c. gene therapy	d. sticky ends

21) In hybridoma technology, hybrid cells are selected in —			
a. MS medium	b. HAT medium	c. x-gal medium	d. Whites medium
22) What is the first step in producing monoclonal antibodies?			
a. Injecting a mouse with an antibody	b. Injecting a mouse with an antigen	c. Removing spleen cells from a mouse	
23) What is a cloning vector?			
a. DNA probe used to locate a particular gene in the genome.	b. An agent such as plasmid, used to transfer DNA from an in vitro solution into a living cell.	c. An enzyme that cuts DNA into restriction fragments.	
24) It is the transfer of genetic material for the purpose of treating human disease.			
a. chemotherapy	b. gene therapy	c. gene transfer	d. gene editing
25) Name the mapping technique used to determine the position of restriction sites in a DNA molecule.			
a. Genetic map	b. Restriction mapping	c. Biochemical markers	d. DNA markers
26) What is transformation?			
a. The use of viruses to transform or genetically engineer cells	b. The measure of how well cells are transformed in a new phenotype	c. The insertion of a foreign plasmid into a bacterial cell resulting in new acquired traits	
27) Which vector is least effective at entering cells?			
a. retrovirus	b. adenovirus	c. liposome/naked DNA	d. Herpes simplex
28) Which vehicles are often used for gene therapy to carry healthy genes?			
a. bacteria	b. plastic capsules	c. viruses	d. any infectious agent
29) Which viral life cycle allows viral genetic material to lay dormant while the host cell reproduces?			
a. lytic	b. mitosis	c. lysogenic	d. S phase
30) — means the cells are removed from the body, incubated with the vector and gene-engineered cells returned the body			
a. <i>In vivo</i>	b. <i>In situ</i>	c. <i>Ex vivo</i>	d. <i>Ex situ</i>
31) In gene therapy, in order to be successful, the healthy gene inserted into the target cell must —			
a. take over and kill the defective gene	b. be inserted manually into the cells mitochondria	c. become attached to the cells mRNA molecules	d. be able to make the correct amount and type of protein needed
32) The gene formed by the joining of DNA segments from two different sources are called as			
a. recombinant gene	b. joined gene	c. both a and b	d. chimaeric gene
33) The DNA fingerprint pattern of a child is —			
a. Exactly similar to that of both of the parents	b. 100% similar to the father's DNA print	c. 100% similar to the mother's DNA print	d. 50% bands similar to father and rest similar to mother
34) Each individual has a unique DNA fingerprint as individuals differ in —			
a. number of minisatellites on chromosome	b. location of minisatellites on chromosome	c. size of minisatellites on chromosome	d. all of these
35) Out of the following, which technique detect single nucleotide polymorphism?			
a. RFLP	b. AFLP	c. SSLP	d. SNP
36) Transformation of animal germline cells can be done by gene transfer to —			
a. Totipotent cells	b. Plant cells	c. Yeast cells	d. Bacterial cells
37) The vaccines prepared through recombinant DNA technology are			
a. Third generation vaccines	b. First-generation vaccines	c. Second-generation vaccines	d. None
38) Because DNA has a universal code, _____ from one organism can be successfully inserted into another organism.			
a. genes	b. proteins	c. hormones	d. lipids
39) Where are the genes that encode for proteins required for replication encoded in a plasmid?			
a. Near origin of replication	b. Opposite to origin of replication	c. In the bacteria's genome	d. Not present
40) Variable number of tandem repeats (VNTRs) in the DNA molecule are highly useful in —			
a. Monoclonal antibody production	b. DNA fingerprinting	c. Recombinant DNA technology	d. Stem cell culture
41) Which type of restriction enzymes are commonly used in rDNA technology			
a. Type I	b. Type II	c. Type III	d. Type IV
42) Which virus carries RNA instead of DNA			
a. Herpes Simplex Virus	b. Retrovirus	c. Adenovirus	d. Adeno-associated virus
43) Which statement correctly describes a way that bacteria are used in biotechnology?			
a. Bacteria make human cells that make insulin.	b. Human insulin made by bacteria is injected into humans.	c. Bacteria that make insulin are implanted in humans	d. Human insulin coding bacterial genes are spliced into human cells.
44) What happens to plasmids after the gene is inserted into them?			
a. They are grown on a petri dish	b. They are placed back into the bacterial cells	c. They are removed from the bacterial cells	
45) The map of the chromosome which shows identifiable sites is called —			
a. Gene expression	b. Genome map	c. Chromosome walking	d. Genome sequencing
46) — DNA is created by using the — from a bacteria and splicing a section of DNA into it.			
a. recombinant, plasmid	b. Cloning, ribosome	c. transcription, translation	d. cumulus, mitochondria
47) — is used to ensure the bacteria transformed with the antibiotic resistance gene as only the transformed bacteria grow on the medium			
a. ampicillin	b. arabinose	c. LB	d. GFP
48) What is one disadvantage of using a virus to deliver DNA?			
a. Causing an immune response	b. It is impossible to deliver genetic information by a virus	c. Viruses can't carry genetic information	

49) How is the process of Gene Therapy used to treat Cystic Fibrosis?			
a. By replacing the abnormal gene with a copy of the normal gene	b. By removing a portion of the abnormal gene	c. By adding a nitrogen base to the beginning of the DNA sequence	d. By inducing a mutation
50) What is recombinant DNA			
a. DNA from 2 different organisms combined	b. DNA from 2 different ribosomes	c. DNA that is separated out from a vector	

Q2: CHOOSE (✓) OR (✗) AND WRITE THE LETTER OF THE CORRECT ANSWER IN YOUR ANSWER SHEET (30 points, 1 point each)

1) The epitope is a specific piece of the antibody, while paratope is a specific site on the antigen.	a. True	b. False
2) REases called endonucleases because they present inside the organism cells.	a. True	b. False
3) In germline gene therapy, genetic alterations will be passed down to future generations (heritable)	a. True	b. False
4) Newly transcribed RNA strand must be synthesized in the 5' to 3' direction.	a. True	b. False
5) During DNA replication, lagging strand grows in the 5'-to-3' direction in a continuous manner	a. True	b. False
6) The genetic code is the set of rules used by living cells to translate information encoded within rRNA into proteins.	a. True	b. False
7) Methylases are enzymes that adds methyl groups (CH3) to adenine (A) or cytosine (C) bases within the recognition site.	a. True	b. False
8) Chromosome is consisting of histone H1 binding to a nucleosome, which contains a histone octamer and DNA.	a. True	b. False
9) All organisms follow the genetic flow of central dogma of molecular biology without any exception	a. True	b. False
10) Retroviruses makes DNA from RNA using transcriptase enzyme	a. True	b. False
11) Gene promoter contains an initiation site containing starting sequence such as TATA boxes where transcription of the gene begins	a. True	b. False
12) Natural clones in mammals share the same nuclear and mitochondrial DNA genomes	a. True	b. False
13) a plasmid replicates only when the host genome is undergoing replication	a. True	b. False
14) In most multicellular organisms, mitochondrial DNA (mtDNA) is maternally and paternally inherited.	a. True	b. False
15) Plasmids can be cut at specific sequences called restriction sites.	a. True	b. False
16) B cell + myeloma -> hybridoma	a. True	b. False
17) Following insertion of a plasmid into competent cells, and plating of the cells on an ampicillin-beta-galactosidase media, a researcher would select white colonies for additional study.	a. True	b. False
18) Monoclonal antibodies are released from the placenta when a woman becomes pregnant.	a. True	b. False
19) Monoclonal antibodies have applications in cancer therapy and diagnostic microbiology.	a. True	b. False
20) It is possible to make artificial twins.	a. True	b. False
21) Location of genetic markers is facilitated by physical mapping on the basis of the frequency of recombination.	a. True	b. False
22) A single monoclonal antibody can bind to several different sites on an antigen.	a. True	b. False
23) Antibody fragments are advantageous than Monoclonal antibodies.	a. True	b. False
24) In somatic gene therapy, genetic alterations are restricted to that individual and will not be passed down to future generations (non-heritable)	a. True	b. False
25) The antibodies produced by the hybridoma are all of poly-clonal antibodies	a. True	b. False
26) HGPRT enzyme mediates the formation of AMP, while APRT enzyme mediates the formation of IMP & GMP.	a. True	b. False

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27) In embryo splitting method of cloning, nuclear genes and mitochondria genes would be identical within all clones.	
a. True	b. False
28) Most REases recognition sites are palindromic that means REases - sequence reads the same in a 5'→3' direction on each strand.	
a. True	b. False
29) The cloning site in the recombinant vector is a specific DNA sequence that must be present in a plasmid for it to self-replicate	
a. True	b. False
30) Foreign DNA to be cloned is inserted in the ORI sequence.	
a. True	b. False

Q3: MATCH THE NUMBER OF THE DESCRIPTION FROM COLUMN A, ON THE RIGHT WITH THE LETTER OF THE CORRESPONDING NAME IN COLUMN B ON THE LEFT (5 points; 1 point each)

Column A	Column B
1) An organism in which foreign genes have been incorporated is called a —	A) Restriction endonuclease
2) Combining genes from different sources into a single DNA molecule known as —	B) Cloning
3) The most direct source of monoclonal antibodies are — cells.	C) Hybridoma
4) Creating an identical copy of a gene or organism is a —	D) rDNA technology
5) DNA can be cut into shorter sequences by proteins known as —	E) Transgenic organism

Q4: WRITE SHORT NOTES ON THE FOLLOWING (10 points; 2.5 point each)

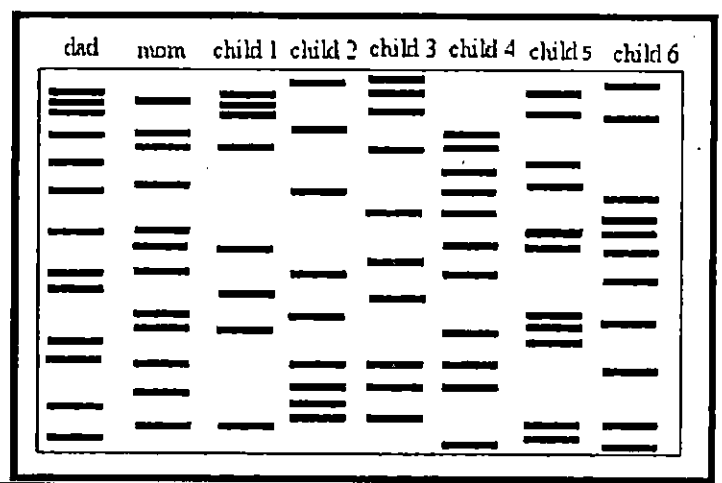
- 1) Applications of Recombinant (Cloning) vectors
- 2) Problems with gene therapy
- 3) Genetic engineering of laboratory animals and its application
- 4) Alternative methods replacing use of laboratory animals

Q5: ANSWER THE FOLLOWING (5 points; 2.5 points each)

1) Mr. & Mrs. Jones just gave birth to fraternal twins- Bob and Jane. Unfortunately, the nurse has confused the Jones twins with 4 other babies. The doctors took samples of DNA from each of the babies and Mr. & Mrs. Jones.

Which of the 6 children are Mr. & Mrs. Jones twins?

Your answer should be in this way
 ___ are Mr. & Mrs. Jones twins

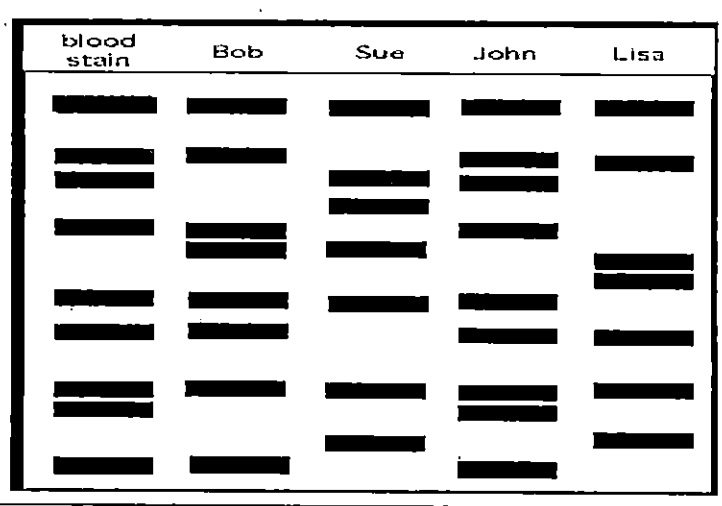


2) Mrs. Brown had baked a birthday cake for her husband and then left it in a tin on the kitchen table. When she returned from shopping all that was left in the cake tin was a few crumbs and a smudge of blood where the thief had snagged their finger on the sharp edge of the tin. Below are the DNA fingerprints of her four children.

Which one of the children's DNA fingerprints most closely matches the blood stain and therefore is most likely to be the thief?



Who ate the cake?

Your answer should be in this way
 ___ ate the cake



End of the exams

With best wishes from the examiners

	Tanta University Faculty of Science Department of Zoology		
	EXAMINATION FOR 2nd LEVEL STUDENTS SPECIAL ZOOLOGY		
Course title: <i>Medically important animals and human health</i>	Student No.: 1	Course code: ZO2216	
Date: 31 ST DECEMBER, 2020	Total assessment marks: 100	Time allowed: 2 HOURS	
Examiners: Prof. Mohamed Bastony and Assoc. Prof. Soha Goma			

Question 1 (46 marks)

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Fill in the blank with appropriate word(s)?

1. — are substances that cause harmful effects to organisms when sufficient quantities are absorbed, inhaled or ingested.
2. — is used when poisons are produced biologically, while — is used when poisons are produced by human-made activities.
3. Poison is — or — toxin, while venom is — toxin.
4. Animal venoms, such that of snakes are complex mixtures of bioactive agents which may be — or —.
5. The main biological functions of the animal venoms are 1—, 2—, 3—, 4—.
6. Neurotoxic venom attacks CNS causing —, resulting in — of nerve impulses from the brain to muscles.
7. If the amount of antivenom is in great excess it may act to — from interaction with the acetylcholine.
8. — protein is a venom cytotoxin that can induce apoptosis in cancer cells
9. Contortrostatin (CN) is — rather than —.
10. Haemotoxins components of venom can be categorized physiologically into 1—, 2—, 3—, 4—.
11. Presynaptic neurotoxins directly target sites on —, whereas — neurotoxins target AChR to prevent its binding to ACh.
12. — is a drug made from snake venom that show a promise in breaking down of blood clots and decreasing levels of fibrinogen.
13. — is presynaptic neurotoxin which has toxic effect on the nerve cell, but — is a postsynaptic neurotoxin which has toxic effect on the nerve cell.
14. — is a venom procoagulant that converts prothrombin to thrombin leading to a depletion of available fibrinogen.
15. Phospholipases A2 is one of venom anticoagulants which bind to — and — to produce anticoagulation effect without concurrent fibrinolysis.
16. Venom myotoxins induce — that involve disruption of the plasma membrane and disorganization of the myofibrils resulting in —.
17. — are venom cytolytic proteins which have the property of destroying the cancer cells selectively, without harming normal cells.
18. Neurotoxins components of venom can be categorized physiologically into — or —.
19. Phospholipase contributes in — and releases — into blood plasma.
20. Contortrostatin belongs to a class of proteins known as — that disrupt the function of — proteins.
21. Toxins are classified according to the form of delivery — and —.
22. Myotoxic venom contains peptides that destroy the protein in the muscle fibers resulting in —.
23. — is a biological product used in the treatment of venomous bites or stings.
24. — is made by injecting venom from a variety of different snake species into an animal developing the anti-venom, while — is made by injecting venom of a specific specie of snake into an animal developing anti-venom.
25. The venom discharge of cnidarian animals may lead to Type I hypersensitivity reaction, including —.

Question 2 (27 marks)

Choose the correct answer? (15 marks)

1. Depolarization at the axolemma of the nerve opens calcium channels result in the release of —
a- Acetylcholine b- Sodium (Na⁺) c- Potassium (K⁺) ions

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2. — contributes to rupture of red blood cells and releases hemoglobin into the blood plasma (hemolysis).
a- Cholinesterase b- Phospholipase c- Hyaluronidase d- Phosphodiesterase
3. — is a drug made from snake venom, showing a promise in breaking down blood clots.
a- Integrin b- Disintegrin c- ANCROD
4. — causes veins compression very tightly up against the skin, resulting in loss of blood circulation
a- Cytotoxic venom b- Haemotoxic venom c- Myotoxic venom d- Neurotoxic venom
5. — degrades Glycosaminoglycans (GAGS) and causes other enzymes in the venom to be absorbed more rapidly into human tissues
a- Cholinesterase b- L-amino acid oxidase c- Hyaluronidase d- Phosphodiesterase
6. Taipoxin is a —.
a- Postsynaptic neurotoxic venom component b- Presynaptic neurotoxic venom component
7. Taipan toxin1 is a —.
a- Postsynaptic neurotoxic venom component b- Presynaptic neurotoxic venom component
8. Oscutarin is a venomous component that has — feature.
a- Anticoagulants b- Platelet toxins c- Procoagulants d- Plasminogen inhibitor
9. Phospholipases A2 (PLA2) is a venomous component that has — feature.
a- Anticoagulants b- Procoagulants c- Plasminogen inhibitor
10. — is responsible for the negative cardiac reactions in victims and a rapid drop in blood pressure
a- Cholinesterase b- L-amino acid oxidase c- Hyaluronidase d- Phosphodiesterase
11. — is transmission of cancerous cells from an original site to one or more sites elsewhere in the body through blood vessels.
a- Angiogenesis b- Metastasis c- Oral Hygiene d- Suspended state of animation
12. Rattle snake is a — animal species
a- Venomous b- poisonous c- harmless
13. — is the process of development of new blood vessels, exploited by a tumor to obtain nutrients and growth factors.
a- Angiogenesis b- Metastasis c- Oral Hygiene d- Suspended state of animation
14. Contortrostatin is isolated from the animal venom and belongs to —.
a- Disintegrins b- Integrins c- Antivenins
15. Acetylcholine (Ach) dissociates from the AChR and is bound by — which breaks it into acetate and choline.
a- Cholinesterase b- L-amino acid oxidase c- Hyaluronidase d- Phosphodiesterase


Question 3 (27 marks)

Decide whether the following statements are true or false with correction? (10 marks)

1. Anesthesia found to be very effective in deactivating the nematocysts of venomous cnidarians.
2. Immersing the stung limb in vinegar is an effective first aid for venomous fish.
3. Venomous cnidarians carry venom-gland mainly in fins for self-defense.
4. Metastasis is temporary cessation of the vital functions, as by freezing an organism.
5. Atropin and Kaotree are cytotoxins that can induce apoptosis or cell death in cancer cells.
6. ACTX-6 is a biological product used in the treatment of venomous bites or stings.
7. Coagulopathy is transmission of cancerous cells from an original site to sites elsewhere in the body.
8. Myonecrosis is a process of the development of new blood vessels exploiting by a tumor to obtain nutrients.
9. Platelet toxins inhibit conversion of plasminogen to plasmin inhibiting clot dissolution.
10. Too little haemostasis results in thrombosis while too much haemostasis results in haemorrhage.
11. Toxins are helpful when used in large amounts, but poisonous when used in small doses.
12. Cyanotoxins produced by fungi however mycotoxins are produced by cyanobacteria.
13. Oral hygiene is maintaining oral tissues and structures in healthy state
14. Protease catalyzes the decomposition of ATP and plays central role in causing shock and immobilizing.
15. The snake venom is kept in a normal salivary gland.

Best wishes from The Examiners

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAM FOR SOPHOMRE STUDENTS OF SPECIAL ZOOLOGY			
COURSE TITLE:	ENTOMOLOGY		COURSE CODE:ZO 2105	
DATE	MARCH, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:150	TIME ALLOWED: 2 HOURS

Answer the following questions in your answer booklet

Part I: Morphology & Taxonomy (80 marks)

1-Discuss the following items only with fully labeled drawing (10 marks, 5 each):

- A. The Piercing –sucking mouth part mouthpart.
- B. Basic components of insect integument.

2-Write short notes on the following (20 marks, 5 each)

- A. The Siphoning (sucking) mouthpart.
- B. Abdominal appendages of immature insects.
- C. The different types of larvae.
- D. Wing-coupling mechanism.

3-Indicate whether the following statements are true or false (10 marks, 2 each):

- A. The immature stage of some holometabolous insect are called naiads.
- B. Wings have no muscles inside them.
- C. In exarate pupae, the legs and wings glued to the body.
- D. The integument of insects is an effective barrier against many pathogen and insecticides.
- E. In chewing type of mouthparts, maxilla posses 5 jointed palp attached to stipes.

4-Fill in the blanks with the appropriate words (20 Marks; 2 each):

- A. Venation is the term given to
- B. The 11th abdominal segment is usually reduced and divided into three lobesand.....
- C. The prothorax never bears
- D.is pair of lobe-like projection on theof the abdomen of aphid.
- E. If the terminal segment of antennae is suddenly enlarged; the type is termed.....
- F. The earwigs have powerful
- G. The fore legs of praying mantis are modified for
- H. The ovipositor of honey bee workers is modified into.....
- I. The type of mouth parts of dragon fly naiad is
- J. The labrum of mandibulate mouth parts prevents.....

5-Indicate whether the following statements are true or false (10 marks; 1):

- A. All Diptera have piercing-sucking mouth parts.
- B. Suborder: Symphyta have a narrow junction between the thorax and abdomen "petiole."
- C. Order Coleoptera undergo complete metamorphosis.
- D. The members of Subclass: (Apterygota) are small primitive wingless insects.
- E. The adult of suborder: Cyclorrhapha have aristate antennae.
- F. Suborder: brachycera (Diptera) contains vectors of diseases.
- G. Grasshopper has special receptors for sound (tympana) are located on the sides of the last thoracic segment.
- H. The mouth parts of bees are mandibulate.
- I. Anopheles sp is a vector of malaria.
- J. Exopterygota meaning Pterygota with complete metamorphosis.

6- Choose the correct answer in the following (10 marks, 2 each)

- A. Metamorphosis is gradual in (biattodea – Hymenoptera – Siphonoptera).
- B. The fore wings of Orthoptera are (Tegmina – Membranous – Hemielytra).
- C. Suborder: Anoplura is commonly known as (Plant feeders - chewing lice - sucking lice).

- D. The hind coxa dividing the first abdominal sternum this is the most distinctive character of (Adephaga - Polyphaga - Caelifera).
- E. The pupae of Hymenoptera are (Coarctate - Exarate - Obtect) type.

Part II: Anatomy (70 marks)

7. Choose the correct answers (26 marks, 2 each):

- A. The foregut of insects is (ectodermal - mesodermal - endodermal) in origin.
- B. Most of the digestion takes place in (gizzard - oesophagus - midgut) of insects.
- C. Storage excretion takes place in (Malpighian tubules - fat body - salivary gland).
- D. This structure is NOT part of the central nervous system (frontal ganglion - circum esophageal commissure - Tritocerebrum - subesophageal ganglion).
- E. The deutocerebrum innervates the (mouthparts - antennae - compound eyes - heart).
- F. An ommatidium is best defined as a (subdivision of the ventral nerve cord - unit of the compound eye - mechanoreceptor - ventral lobe of the insect's brain).
- G. In most insects, the sense of smell is localized in the (tarsi - antennae - maxillary palps - frons).
- H. Uric acid excretes through Malpghain tubules by (simple diffusion - active transport - passive transport).
- I. The circulatory system of insects is (open dorsal - open ventral - closed dorsal) type.
- J. Fertilized egg which produced by queen of honey bee grow to (workers-drones-workers or queen).
- K. This structure is NOT part of an insect's tracheal system (sinus - taenidia - spiracle - tracheole).
- L. An insect's heart is best described as a (pulsating - dorsal - abdominal -all of these).
- M. Insects that become sexually mature and produce offspring before they molt into adults are said to be (paedonegic - parthenogenic - viviparous).

8. State whether the following sentences are true or false (20 marks, 2 each):

- A. Tympana and chordotonal organs may both function as sound receptors.
- B. Gills allow aquatic insects to utilize oxygen that is dissolved in water.
- C. The physical gill extracts oxygen from water.
- D. Crop serves as a food reservoir in insects.
- E. The rectum is important in the re-absorption of water, salts and amino-acids from the urine.
- F. Excretion means the removal of nitrogenous wastes, maintenance / regulation of salts and water balance.
- G. Excretion function is achieved by passive transport to moves wastes into tubules.
- H. Peripheral nervous system innervates the reproductive system and the posterior part of the gut.
- I. Digestion is essential physiological process from the view point of propagation of the insect species.
- J. Air sacs are used for more effective air supply during flight.

9. By fully labelled drawing illustrate the structure of hemocytes and write short notes on the function of insect haemolymph. (12 marks)

10. Only by fully labeled drawing illustrate (12 marks, 6 each):

- Respiration in aquatic insects.
- Types of ovarioles in insects.

Good luck!

Examiners	Dr. Wesam Meshrif	Dr. Noha Dabour
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TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF ZOOLOGY

EXAMINATION FOR (SECOND YEAR) STUDENTS OF SPECIAL ENTOMOLOGY

COURSE TITLE:	Economic Entomology	EN2105	
24-3-2021	FIRST TERM	TOTAL MARKS:150	TIME ALLOWED: 2 HOURS

الإمتحان في ورقتين

Section A

1-State whether the following sentences are true (√) or false (×), correct the false one: (2.5 marks each, total 25 marks)

- 1- Aesthetic value of insects comes only from their shape, color and pattern. ()
- 2- The stings of honey bees have medical value for diseases such as influenza. ()
- 3- Silk worm adults feed on mulberry leaves and lay 20-50 eggs ()
- 4- A larva of silk worm enclose itself in a cocoon which consists of many natural silk threads. ()
- 5- Honey is truly an insect product while beeswax is a natural secretion. ()
- 6- Beewax is used for manufacturing candles, dental impressions and crayons. ()
- 7- The lac insects produce shellac to harden the host plant. ()
- 8- The light produced by the bodies of fireflies is visible. ()
- 9- Cochineal dye is derived from the pulverized bodies of the cochineal bugs which feed on plant galls. ()
- 10- Chalcid wasps attack hosts in orders Lepidoptera, Coleoptera and Diptera. ()

2.Give short notes on the following: (each 4 marks, total 20 marks)

- 1- Gall insects are considered to be beneficial and harmful to human economy.
- 2- The importance of insects in scientific research
- 3- Ischnumon wasps are beneficial for human economy
- 4- The economic importance of shellac
- 5- Prevention and control of stored product pests

3- Mention the economic loss caused by the following: (each 5 marks, total 30)

- 1- Rice weevils
- 2- Grain borers
- 3- Demisted beetles
- 4- Horse fly
- 5- Stable fly
- 6- Horse pot

Section B

A-Give a short account on the following(Total 35 Marks, 5 Marks each)

- 1- Black fly borne diseases
- 2- Psyllids
- 3- Stigmosis.
- 4- Banana bunchy top virus
- 5- Potato blackleg .
- 6- Ergot of cereals and grasses
- 7- Louse borne diseases .

B-Fill in the blanks with the appropriate words: (Total 20 Marks.)

- 1- Bruchidae. are known as..... They are serious pests of plants.
- 2- The cotton leaf curl virus is transmitted by
- 3- Squash mosaic virus is transmitted byand.....
- 4- The malaria (*plasmodium*) transmission by.....whileis the main vector of Dengue.
- 5- The insects that attack humans includes.....;.....and.....
- 6- Species of insects producing the toxic substance were termed..... such as.....
- 7- One of the common fungi is sooty mold funguswhich causes the troublesome sooty mold of ...
- 8- The damage caused by the pink boll worm to cotton is two fold.....
- 9- The presence of the red palm weevil larvae in palm can be detected by.....
- 10- Potato leaf roll virus is transmitted by

C-Indicate whether the following statements are true or false without correction the false one(Total:20 marks,2 mark each) :

- 1-The straw berry weevil damage blossoms during oviposition activity.()
- 2-Grasshoppers are well known example of piercing- sucking insects.()
- 3- White grubs are pests of tomatoes.()
- 4-The oriental rat flea is the principle vector of epidemic typhus.()
- 5- The mole cricket is an example of the leaf chewers.()
- 6- The cottony cushion scale is a serious pest of cotton.()
- 7- The spotted cutworm are climbing species usually climb stem of trees and eat the plant parts. ()
- 8-Insects feed on the tissue between the upper and lower epidermis of leaf known as leaf miners.()
- 9- The alfalfa mosaic viruses are transmitted by white fly. ()
- 10-Bazzar fiy is main vector of elephantiasis. ()

Good Luck

Examiners:

Dr. Samar El Kholly

Dr. Noha Dabor



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF ZOOLOGY

EXAMINATION FOR SOPHOMORES (SECOND LEVEL) STUDENTS OF ZOOLOGY

COURSE TITLE:	ZOOGEOGRAPHY		COURSE CODE: ZO 2113	
DATE: 10	MARCH, 2021	TERM: FRIST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

(25 marks)

I-A- Choose the correct answer:

- 1- Parsimonious hypothesis requires:
 - a. largest number of unobserved events to account for it.
 - b. largest number of observed events to account for it.
 - c. smallest number of unobserved events to account for it.
 - d. smallest number of observed events to account for it.
- 2- Bathymetric distribution means:
 - a. altitudinal distribution.
 - b. vertical distribution.
 - c. perpendicular distribution.
 - d. all the above.
- 3- Species richness is related to:
 - a. immigration of only new species.
 - b. extinction of only species already present.
 - c. rates of immigration and extinction.
 - d. all of the above.
- 4- Which of the following is true of Tropical forest biome?
 - a. located on both sides of the equator.
 - b. located on southern sides of the equator.
 - c. located on northern sides of the equator.
 - d. inside the forest it is dark and very dry.

I-B- Explain Taiga biome.

(25 marks)

II- Write an essay about the following:

- 1- Oriental region.
- 2- Abyssal region.

III- (A) Complete the following statements:

(25 marks)

- 1- Ecesis means.....
- 2- Discontinuous distribution means.....

(B) Animals are highly specialized to face the severity of rarity of water in desert biome, explain!

IV- Write short notes on Continental islands. Give one example.

(25 marks)

Best wishes!

EXAMINERS	PROF. DR. ABDEL-NAIEM I. ALASSIUTY	PROF. DR. MOHAMED A. KHALIL
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TANTA UNIVERSITY			
FACULTY OF SCIENCE- ZOOLOGY DEPARTMENT			
FINAL EXAM OF 2nd LEVEL STUDENTS (ALL MAJORS)			
COURSE TITLE: CELL BIOLOGY & GENETICS			CODE: ZO2101-
TERM: 1st SEMESTER	DATE OF EXAM: 13 March, 2021	ASSESSMENT MARKS: 150	TIME: 2 HOURS

Question 1: Cell Biology

(75 marks)

Q1-a: Identifid only 6 of the following:

1. Resolution
2. Exfoliative cytology
3. Hypoxia and hypoxemia
4. Hypertrophy
5. Magnification
6. Contrast
7. Depth of Field
8. Free radicals

Q1-b: What is different between only 3 of the following with drawing as possible:

- 1: Hyperplasia and Metaplasia
- 2: Atrophy and hypertrophy.
- 3: Dysplasia, neoplasia and analpasia.
- 4: LM and EM.

Q1-c: Write short notes and drawing as possible in only 2 of the following:

- 1: The morphology of apoptosis and necrosis.
- 2: Causes of cell injury.
- 3: Cell fractionation to separate the major organelles of the cells.
- 4: Overview of cell signaling.

PART II: Genetics

2nd question

(75 marks)

Q2-A: Explain the following (30 Marks):

1. Write essay: why Thymine is different structurally from Uracil; why Deoxyribose sugar is different from Ribose sugar.
2. Explain the differences between studying genetics in Microbiology, Biochemistry, Biophysics and Zoology branches of your specialties.
3. What happens when the ability to repair damage caused by UV light is deficient in a family.
4. Explain the role of the three types of RNA during formation of a protein.
5. Explain briefly the early mechanism by which how cells decide to start BER.
6. Explain the main principles of posttranslational modifications.

Q1-B. True (✓) or False (X) (if false, write the correct answer) (20 marks):

1. DNA exists only in nuclei, while RNA exists only in cytoplasm.
2. All DNA in eukaryotic cells comes from both parental and maternal origins.
3. The origin of replication exists at the beginning of each chromosome.
4. Splicing process in DNA repair starts due to activation by the UV light.
5. The mechanism of P-factor depends on hair pin.
6. Initiation of transcription in eukaryotes involves recognition of promoter by transcription factors.
7. Prokaryotic transcripts must not be processed to produce mature mRNAs.
8. The leading strand reading from 5' to 3' is the template strand.
9. Linker histone consists of about 146 bp of DNA wrapped in 1.67 left-handed superhelical turns around the histone octamer.
10. Genetic code is redundant: this means it has multiple codes for to the same amino acid.

انظر خلفه

Q1-C. Choose the correct answer: (20 marks)

- 1- The pentose sugar ring is covalently attached to which position of the purine bases to form a nucleoside:
 - a) 1-position (N – 1)
 - b) 2-position (N – 2)
 - c) 3-position (N – 3)
 - d) 9-position (N – 9)
- 2- DNA exists in which form in cells:
 - a) Linear
 - b) circular
 - c) linear and circular
 - d) None of the above is correct
- 3- Allele is:
 - a) One of a number of alternative forms of the same gene
 - b) Individuals have 2 copies of same gene of a trait
 - c) Having two different alleles of the same gene
 - d) Mating between individuals who have different alleles at one genetic locus
- 4- Dimers between two adjacent bases result from:
 - a) Chemicals
 - b) Radiation
 - c) UV light
 - d) Enzymes
- 5- Endonucleases are involved in:
 - a) Oxidation
 - b) Hydrolysis
 - c) Methylation
 - d) Alkalyation
- 6- The basic units of DNA packaging in eukaryotes, consisting of a segment of DNA wound around a histone protein core are:
 - a) Chromosomes
 - b) Polysomes
 - c) Nucleosomes
 - d) Ribosomes
- 7- Polymerase I in prokaryotes is termed what in eukaryotes:
 - a) DNA polymerase α
 - b) DNA Polymerase β
 - c) DNA polymerase γ
 - d) none of the above
- 8- The number of replication mistakes by DNA polymerase could occur as:
 - a) 1 error in 10^7 base pairs
 - b) 1 error in 1007 base pairs
 - c) 1 error in 10^7 base pairs
 - d) 10 errors in 10^7 base pairs
- 9- Deoxy(N)triphosphates are:
 - a) Enzymes
 - b) Amino acids
 - c) Nucleotides
 - d) Chemical bonds
- 10- Phosphorylation for primary proteins for activation or de-activation is:
 - a) Post-transcriptional modification
 - b) Post-replicative modification
 - c) Post-translational modification
 - d) Post- DNA repair modification

Q1-D. Complete the following: (5 marks)


- 1- We read the nucleotide sequence in multiple nucleotide chain, each nucleotide is termed with a single letter. This letter is the first -----
- 2- Inside the cell: protein biosynthesis occurs in the ----- while protein modification occurs in-----
- 3- Some enzymes contain more than one polypeptide chain and each of it encoding one different gene. This is called:-----
- 4- -----is the use of computers for the sake of Biology.
- 5- The Central Dogma of living organisms is considered to be:-----

Prof. Ehab Tousson

Examiners

Prof. Esayed I Salim

Good luck,

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION FOR SECOND LEVEL STUDENTS OF SPECIAL GEOLOGY		
COURSE TITLE:	Invertebrate forming skeleton	COURSE CODE:ZO2127	
DATE:	6/3/2021	FIRST TERM	TOTAL ASSESSMENT MARKS: 150 TIME ALLOWED: 2 HOURS

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First part.....(50 marks)

1- Write shortly on the following: (15 Marks, 5 Marks each)

- (A) Importance of coral reef.
- (B) Applications of Foraminifera.
- (C) Mechanism of coral reef calcification.

2- Choose the correct answer: (8 Marks, 2 Marks each)

(A) The word "pseudopodia" means:

- 1- Small cell
- 2- First animal
- 3- False eye
- 4- Fake foot

(B) Alternation of generation occurs in phylum Cnidaria particularly in:

- 1- Anthozoa
- 2- Scyphozoa
- 3- Hydrozoa
- 4- Protozoa

(C) Particular species of protist has obtained a chloroplasts via secondary endosymbiosis called:

- 1- Bacteria
- 2- Zooxanthella
- 3- Diatoms
- 4- Both (2 & 3)

(D) Digestion in Cnidaria occurs in:

- 1- Extracellular
- 2- Both extra and intracellular
- 3- Intracellular
- 4- No digestion

3- Mention the function of the following: (15 Marks, 5 Marks each)

- (A) Zooxanthellae
- (B) Nematocysts
- (C) Pseudopodia

4- Complete the following statements :(12 Marks , 2 Marks each)

- a. The shell of some foraminiferal species is composed of1..... ,2..... or3.....
- b. Corallum is
- c. Chalk rocks is formed of
- d. Hermatypic means

Second part(60 marks)

1- Give the Scientific term (10 Marks, 5 Marks each)

- a. The inactivated period of *Helix* sp. during hot seasons
- b. The ability of *Chiton* to return to its inhabiting place.

2- Put true or false then correct the false statement (10 Marks, 2 Marks each)

- a- The right-handed gastropod shell is called dextral.
- b- *Anodonta* has anterior and posterior protractor muscles.
- c- *Neopilina* sp. belongs to class Monoplacophora
- d- *Sepia* has no shell.
- e- Chiton is filter feeder.

3- Give two reasons for the following (4 Marks)

- a- Gastropod lost their bilateral symmetry.

4- Mention three differences between the shell of *Helix* and that of *Nautilus* sp. (6Marks)

5- Match (6 Marks)

1- () Mussels	a- Has bone shell
2- () Oysters	b- Has elongated shell
3- () Scallops	c- Has Ear shaped shell
	d- Has Fan like shell

6- Mention three only of *Octopus* strategies of defense. (6 Marks)

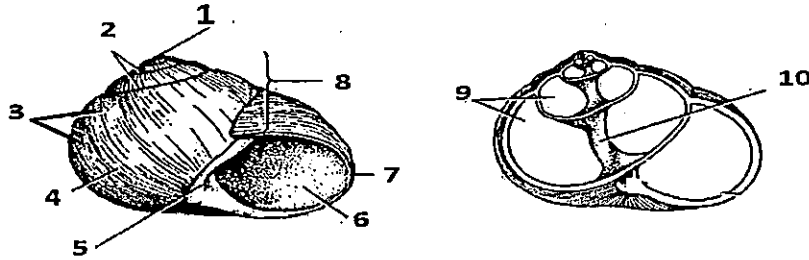
7- Mention two of the economic importance of Mollusca. (8 Marks)

8- Complete (5 Marks, 1 Mark to each space)

a- The study of molluscs is called

b- One of the harmful molluscs is that cause destruction of wood buildings and ships.

9- Complete the missing labels. (5 Marks)



Third part(40 marks)

A) Write on the following points (20 Marks, 5 Marks each)

1. Diagnostic features of phylum Echinodermata.
2. Classification of phylum Echinodermata with examples.
3. Economic importance of Echinoderms.
4. Adaptation of sea-star to its habitat.

B) By drawing only show the following (10 Marks, 5 Marks each)

1. Nervous system of sea-star.
2. Digestive system of *Asteropecten sp.*

C) But True (✓) or False (X) and correct the wrong statements (10 Marks, 2 Marks each)


1. The respiration of sea-cucumber by papulae (dermal gills). ()
2. Madreporite of brittle-star on the aboral surface. ()
3. The life cycle of sea-star has one larva. ()
4. Sea-urchin's mouth characterized by Aristotle's lantern. ()
5. Sea-cucumber's mouth is surrounding by 10 oral tentacles. ()

Best wishes

Examiners: Prof. Nahla Omran

Prof. Hoda Salem

Dr. Aalaa Atlam

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION FOR LEVEL TWO STUDENTS OF ZOOLOGY		
	COURSE TITLE:	Invertebrate systematic and Phylogeny	COURSE CODE: ZO2103
DATE:	24/2/2021	FIRST TERM	TOTAL ASSESSMENT MARKS:150 TIME ALLOWED: 2 HOURS

الامتحان في صفتين

First part

(35 Marks)

- 1- Define trinomial nomenclature and give one example. (5 Marks)
- 2- If a horse interbreeds with a donkey, they will produce a mule. Is this mule will give offspring? Give a reason for your answer. (5 Marks)
- 3- Choose the right answer. (9 Marks, 3 Marks each)
 - a. Theococyte function is.....
 1. storing food 2. producing gametes 3. forming spicules 4. regeneration
 - b. The father of Zoology is
 1. John Ray 2. Aristotle 3. Linaeus
 - c. Sponges can defend themselves by
 1. Stinging cell 2. secret poison 3. secret bad odor 4- predation
- 4- Give the scientific term (9 Marks, 3 Marks each)
 - a. Type of asexual reproduction in Porifera in which archeocytes are grouped in a capsule armed with spicules when the parents were died. (.....)
 - b. Animals were grouped according to their value to man (.....)
 - c. A type of amoebocytes that form gametes and regenerate damaged parts in sponges (.....)
- 5- Mention two affinities of Sponges to Cnidaria (7 Marks)

Second Part

(40 Marks)

- A- Mark true (√) or false (X) for each of the following and for the wrong sentence rewrite (only) the correct word (30 Marks- 3marks each)
1. Simple binary fission preceded by a period of nutrition and growth.
 2. Gametogony is multiple fission takes place after a sexual process, giving rise to spores or naked sporozoites.
 3. Hetreogamy is the fusion between gametes of different species.
 4. Promastigote Elongate form, the kinetoplast is posterior to the nucleus the flagellum is associated with the body by long undulating membrane.
 5. In *P. aurelia* autogamy is recorded.
 6. *Phytomonas sp* found in amastigote form only in the latex of plants.
 7. *Leishmania sp* is an intracellular parasite.
 8. Visceral leishmaniasis caused by *L. tropica*.
 9. American trypanosomiasis caused by *T. cruzi*.
 10. Budding is a division of multinucleate protozoa into two or more smaller individuals.

B- Complete the following table: (10 marks)

	Trypanosomiasis	Leishmaniasis
Infective stage
Insect causing disease
Name of the disease
Site of infection in final host
Extra. -Intra. or Intercellular parasite

Third part

(35 Marks)

A. Put (√) or (x) then correct the wrong ones (12 Marks, 6 Marks each)

1. The sexual reproduction in hydra occurs in unfavorable condition. ()
2. Spirocyte contains a long and sticky thread. ()
3. Nematocytes can discharged for several times. ()



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF ZOOLOGY

EXAMINATION FOR STUDENTS OF SECOND YEAR BIOPHYSICS

COURSE TITLE:	Invertebrate Biology		COURSE CODE: ZO 2242
DATE:	29/12/2020	TERM: JAN.	TOTAL ASSESSMENT MARKS: 150
			TIME ALLOWED: TWO HOURS

Part 1: Annelida (35 Marks)

(A) Write shortly on:(10 marks, 5 marks each)

- 1) The economic importance of Annelida.
- 2) Adaptation of *Hirudo medicinalis* to its mode of feeding.

(B) Mention to functions of the following: (15 marks, 5 marks each)

- 1) Coelome
- 2) Parapodia
- 3) Clitellum

(C) Put (✓) or (×) and correct the false sentences: (10 marks, 2 mark each)

- 1) Earth worm is free living while, *Hirudo sp.* is parasitic ()
- 2) Development of sand worm is indirect while, in earth worm and medical leech is direct ()
- 3) Annelids circulatory system contains 3 pairs of hearts with red colored blood ()
- 4) Life cycle of Annelids animals may be contains Amphiblastula larva ()
- 5) Protruded pharynx is the specific characters of annelids Errantia ()

Part 2: Arthropoda (40 Marks)

1- Answer the following (15 marks, 5 marks for each)

- A. Explain with sketch diagram the circulation of prawn.
- B. In the form of table differentiate between Subclasses Branchiopoda and Copepoda.
- C. Habit and Habitat of Scorpion.

2- Illustrate by only Labelled drawing: (10 marks)

- i – Green gland of prawn
- ii- Mouth parts of *Scolopendra sp.*
- iii- Lung book of scorpion

3- Complete the following: (10 marks, 1 marks each space)

- i- The diversity and success of arthropods are largely related to their,, and
- ii- The head of Crustacea carries,,, and
- iii- Arthrobranchia in prawn when a gill is attached to of an appendages while, pleurobranchiae (side-gills) when a gill is attached toof the

4- Choose the correct answer of the following: (5 marks, 1 marks each)

1- Subphylum chelicerata is characterized by:

- a. The presence of one pair of antenna.
- b. The presence of mandible and Chelipeds.
- c. The presence of three pairs of legs.
- d. Presence of four pairs of legs.

2- Nutrition in prawn is:

- a. Herbivorous.
- b. Carnivorous.
- c. Omnivorous.
- d. All above.

3-The muscles in prawn:

- a. Form a continuous layer with the body wall.
- b. Do not form a continuous layer with the body wall.
- c. Share in the formation of body wall.
- d. All the above.

4- The life cycle of Ticks include:

- a. Egg, Larvae, nymph and young.
- b. Egg, nymph and adult.
- c. Egg, nymph, Larvae, and young.
- d. Direct development.

5- Mysis larva of prawn characterized by:

- a. With well - developed pleopods. Swimming by swimming – legs and Shrimp-like shape.
- b. Carapace not covering completely the thorax.
- c. Contour of the body as a simple pear shape form.
- d. Crab-like shape. Pereipods.

Part 3: Mollusca (40 Marks)

Answer the following:

- 1. Talk about the respiration mechanism in Bivalvia. (9 Marks)
- 2. Differentiate between different types of torsion in Gastropods. (9 Marks)
- 3. Octopus is the most intelligent among all invertebrates, explain. (8 Marks)
- 4. **Complete the following:** (14 Marks, 2 marks for each space)
 - a) Polyplacophora move by, while cephalopods by and
 - b) Since *Helix sp.* is terrestrial, it breathes by, and the respiratory opening is located on
 - c) Common larvae of Mollusca are and

Part 4: Echinodermata (35 Marks)

Answer the following questions:

- 1- With fully labelled drawing explain the structure and functions of water vascular system of sea star. (10 Marks)
- 2- Explain the unique characters of Echinodermata. (7 Marks)
- 3- Differentiate between classes of phylum Echinodermata. (9 Marks)
- 4- Explain in details with drawing the digestive system of Sea star. (9 Marks)

Good Luck



Examiners	Prof. El-Sayed Taha Rizk	Dr. Alaa A. Atlam
	Dr. Mai Lotfy Youns	

Section: 4 (35 Marks) -

A - Complete:

(16 Marks).

- 1) Cnidarians are diploblastic animals with cells in the outer layer for protection, and cells in the inner layer for digestion.
- 2) Cnidarians animals can support their bodies (as a skeleton) by, or
- 3) Coral reefs have formed as a result of special relationship between the polyps and
- 4) There is no alternation of generation in Hydra sp. because they have only in their life cycle, but they can do asexual reproduction by, and reproduction by gametes.
- 5) Cnidaria have decentralized nerve nets consisting of for generating signals

	<p>Tanta University Faculty of Science Department of Zoology</p> <p>EXAMINATION FOR JUNIORS (SECOND YEAR) STUDENTS OF CHMISTRY/ ZOOLOGY</p>	
Course title: Invertebrate systematic and phylogeny		Course code: zo2123
Date: 4 March, 2021	FIRST TERM	Total assessment marks: 150
Examiners: Prof. Mona El Gamal, Prof. Hewaydah Abou-Shafeey, Prof. Lamiaa Bakr and Dr. May Lotfey		Time allowed: 2 HOURS

الامتحان في ثلاث صفحات

Section: 1 (35 Marks)

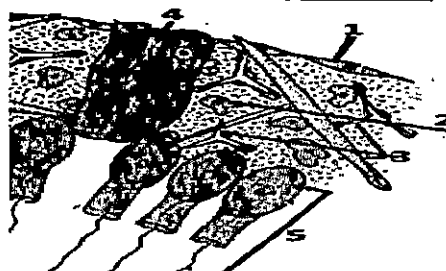
A) From the next drawing answer the following questions (7 Mark).

1-The next figure represents T.S. of.....

2-The structure 5 is called.....and it is specific for Phylum.....

3- The function of cell 4 is.....

4- Mention the labelled from 1 to 3



B) Mention the main characters of Phylum Porifera (five only) (2.5 Marks).

C) Put (✓) or (X) and correct the wrong ones: (7.5 Mark).

1. Mostly sponges are marine ()
2. Digestion in sponges is extracellular ()
3. Inhalant pores of sponges are called oscula ()
4. Syconoid sponges have choanocytes lining the spongocoel ()
5. Excretion takes place in Porifera through simple diffusion ()

D) Complete with appropriate word (s): (9Marks).

1. Class Hexactinellida is called glass sponges because its skeleton contains
2. Sponges havelevel of organization.
3. The term porifera means.....
4. The more complicated sponge structure is.....
5. The sponge larva that resulted from the sexual reproduction is called.....
6. Bath sponges belong to Class

E) Write short notes on the following (9 Marks).

1. Class calcarea
2. 2- The ascon type of sponges (With a fully labeled drawing)
3. 3- Affinities of Porifera with Metazoa (Two similarities and two differences only)

Section: 2 (40 Marks)

A - Decide whether the following statements are true or false and correct the wrong(20 marks).

1. The fourth moulting of *Ascaris lumbricoides* occurs in small intestine of Human. ()
2. lacking of the coelom gives Platyhelminthes a flat body structure. ()
3. The Cysticerci of *Taenia* sp. are found in striated muscles of the intermediate hosts.()
4. Platyhelminthes has both self and cross fertilization. ()
5. The infective stage of *Heterophyes heterophyes* is metacercarium.()