	TANTA UNIVERSITY, FACULTY OF SCIENCE		
	ZOOLOGY DEPARTMENT		
	MID TERM EXAM FOR MAJOR CHEM/ENTOMOLOGY		
	COURSE TITLE:	INSECT POULATION GENETICS	COURSE CODE: EN 3244
TERM: متطلب تخرج	DATE: 3/1/2021	MARKS: 150	2 HOURS

Part I: (75 MARKS)

Q1-A: Define (20 marks)

- 1- Polymorph insect 2- Independent assortment 3- Extended phenotype 4- Genotype

Q1-B: Write on the following: (40 marks)

- The prediction of Hardy-Weinberg's equilibrium.
- How Hardy-Weinberg's equation fits with Mendelian genetics.
- Goals of population genetics.
- Migration and population genetics.

Q2: Note the following and answer the questions Q2-A Q2-B:

$$p^2 + 2pq + q^2 = 1 \text{ and } p + q = 1$$

p = frequency of the dominant allele in the population; q = frequency of the recessive allele in the population;
 p² = percentage of homozygous dominant individuals; q² = percentage of homozygous recessive individuals;
 2pq = percentage of heterozygous individuals.

Answer the following:

Q2-A: Two insect populations with genotypes numbers as follows: (10 marks)

Genotype	White butterflies	Black butterflies
MM	5000	1000
MN	1000	5300
NN	500	1700
Total No.	6500	8000

- 1- Calculate the Genotypic frequencies for both populations. 2- Calculate allele frequencies.
 2- Calculate p and q, if: $P=f(MM)+1/2(MN)$, $q=f(NN)+1/2(MN)$.

Q2-B: You have sampled a population in which you know that the percentage of the homozygous recessive genotype (aa) is 36%. Using that 36%, calculate the following: (10 marks)

- 1- The frequency of the "aa" genotype; 2- The frequency of the "a" allele; 3- The frequency of the "A" allele.;
 4- The frequencies of the genotypes "AA" and "Aa."

2

Part II: 75 marks

1. Fill in the blanks with the appropriate words (24 marks, 3 each):

- A. Genetic drift usually results either in the loss of an allele or.....in the population.
- B. In natural selection, the environment selects the individuals whose traits have
- C. The populations in nature retain the mutation alleles in a condition.
- D. All of the alleles of every gene in a population make up the
- E.refers to the observation that a trait displays variation within a population.
- F. Deviation from a Hardy-Weinberg equilibrium indicates
- G. Mutation rates vary depending on, cell types, chromosomal location, and

2. State whether the statements are true or false with correction (18 marks, 2 each):

- A. Missense mutations involve a change from a normal codon to a stop codon.
- B. Positive assortative mating occurs when similar individuals marry each other.
- C. The population with the bottleneck may regain its original size, but with more genetic variation.
- D. Stabilizing selection tends to increase genetic diversity for a particular gene.
- E. By comparison, the allele frequencies in the large population fluctuate much less.
- F. The expected number of new mutations depends only on the number of individuals in a population.
- G. Disruptive selection favours multiple phenotypes.
- H. Directional selection favours the intermediate phenotype.
- I. The inbreeding produce homozygotes that are less fit, thereby decreasing the reproductive success of the population (inbreeding depression).


3. Choose the correct answer for each statement (15 marks, 3 each):

- A. The resistance of insects to pesticides, such as DDT is an example for (Directional – Stabilizing) selection.
- B. The (phenotype – genotype) frequency is the number of individuals with a particular genotype in the population divided by the total number of individuals in the population.
- C. In frame-shift mutation, addition or deletion of nucleotide(s) may change the translated proteins.
- D. In a (monomorphic – polymorphic) gene, the allele frequency for the single allele will be close to a value of 1.0.
- E. If a population has 1 million breeding members, it takes, on average, four (millions – thousands - hundreds) generations, to reach fixation

4. Answer the following items (18 marks)

- A. In a population of insect, the pigmentation is controlled by two alleles D and d. The allele frequencies are $D = 0.4$ and $d = 0.6$. A group of insects is blown to a new environment, where the fitness values are $DD = 0.3$, $Dd = 0.7$, and $dd = 1.0$. Calculate the allele frequencies in the next generation under directional selection. (9 marks)
- B. In a donor population, the allele frequency for the wing colour is 0.1. A group of 20 individuals migrates to a new population containing 80 individuals; in the recipient population, the allele frequency is of the same trait = 0.01. Calculate the allele frequencies in the conglomerate population. (9 marks)

Examiners	Prof. Elsayed I Salim	Prof. Wesam Meshrif
-----------	-----------------------	---------------------

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (THIRD YEAR) STUDENTS OF SPECIAL ENTOMOLOGY			
COURSE TITLE:	Cell Biology		COURSE CODE: EN3113	
DATE:	March / 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

1- Answer the following questions (with draw if possible). (40 Marks)

- A- Write on moving large molecules into & out of the cell through the plasma membrane?
 B- Mention the main functions of plasma membrane proteins?
 C- Explain in detail cell cycle process?
 D- Compare between Eukaryotic and Prokaryotic cell?

2- Choose the correct answer (write the correct answer in a table) (20 Marks)

1. Cell organelles are embedded in:
 a- Nucleus b- Protoplasm c- Cytoplasm d- Mitochondria
2. Which one of the following organelles digests the old organelles that are no longer useful to the cells?
 a- Ribosomes b- Mitochondria c- Lysosomes d- Chromatin
3. Protoplasm found inside the nucleus is known as
 a- Amyloplast b- Nucleoplasm c- Cytoplasm d- Elaioplast
4. The spherical structured organelle that contains the genetic material is
 a- Cell walls b- Ribosomes c- Nucleus d- Mitochondria
5. During which stage of mitosis do the centromere split
 a- Prophase b- Interphase c- Telophase d- Anaphase
6. Microfilaments are composed of a protein called
 a- Tubulin b- Actin c- Myosin Chitin
7. The oxygen and carbon dioxide crosses the plasma membrane by the process of
 a- Active diffusion b- Facilitated diffusion
 b- Passive diffusion d- Random diffusion

8- Lipid bilayer is:

a- Hydrophilic

b- hydrophobic

c- hydrophilic&hydrphobic

d- depend on the surrounding medium

3-Complete the following sentences:

(20 mark)

a- Cytoskeleton can be defined as, its functions are,..... and its types are,.....

b- Golgi apparatus functions include.....

c- The nucleus consists of,,the main functions of it are,.....

d- The nickname of the mitochondria is, the main functions of it are

e- There are two types of endoplasmic reticulum, explain the main functions of each type.

4- Draw 4 (four) only from the following:

(20 mark) -

a- plasma membrane

b- Different types of diffusion.

c- Golgi apparatus


d- Kind (Types) of lysosomes

e- Nucleus

Best Wishes

Examiners: prof. Dr/ Ezar Hafez

Dr/ Mona Elwan

 1969	Tanta University - Faculty of Science Department of Zoology		
	Examination for the third level (juniors) students Entomology		
Application of Biotechnology in Arthropods and Pathogen Control		Course code: EN 3107	
Date: Mar 2020	Term: first	Total assessment marks: 100	Time allowed: 2 hours

The exams in 2 pages

تقع الأسئلة في صفحتين

First question.....(30 marks)

1. Complete with the correct words.

- A)is a fungus like eukaryotic, the famous example of it is *lagenidium giganteum* which parasitize on mosquito larvae.
- B) Oomycota has.....body wall which is different from fungus withtheir body wall.
- C) Disadvantages of biocontrol are.....,.....,.....and the best example in the bad results was.....
- D) Entomopathogens means.....and it could be bacteria or.....or.....or.....
- E) Biotechnology could be applied recently on four majors or fields as;.....,.....,.....and.....
- F) Biological control means.....with three strategy.....,.....and....
- G) Augmentation involves.....it has two approaches.....and.....release.
- H) *Bacillus thuringensis* followed the.....release strategy, while *Bacillus papillae* used in.....release strategy because.....
- I) Entomopathogenic nematodes locate their hosts in response to,.....
- J) When Bt is ingested by hostcondition in gut were activated the.....protein.
- K) Advantages of nematodes in insect control are.....

Second question.....(14 marks, 2 each)

2. Put (✓) in front of the correct sentence and (X) in front of the wrong sentence:

- A) Using of straw or upside down flower pot in corn field is an augmentation strategy ()
- B) The main character of predators is to be larger than prey ()
- C) Using of Bt has no effects on mosquito control ()
- D) Production of biofuel from aquatic algae represent blue biotechnology ()
- E) *Beauveria bassiana* is an example of entomopathogenic bacteria ()
- F) Release of large number of natural enemies in a field called inoculative release ()
- G) Limited shelf-life time of nematodes that control insect considered one from nematode disadvantage ()

Third question.....(21 marks, 3 each)

3. Write simple definition to the following:

- A) Biotechnology application in arthropod control
- B) Inundative release

أنظر خلفه

- C) Pathogen
- D) Importation strategy
- E) Green biotechnology
- F) Entomopathogenic nematodes
- G) Septicemia in Bt control

Fourth question.....(35 marks)

A) With fully labelled drawing, explain in detail the mechanism of *Bacillus thuringiensis* in insect control (entomopathogenic bacteria).....(8 marks)

B) Complete the following statements in the mechanism of entomopathogenic nematodes control..... (15 marks)


It contain Symbiotic bacteria of the genus or *Photorhabdus*. The is the only free living stage of Entomopathogenic nematodes. The juvenile stage penetrates the host insect via the spiracles,,, or in some species through inter-segmental membranes of the cuticle, and then enters into the or the body cavity. The juvenile stage of nematodes release from their intestines into the hemocoel. The bacteria multiply in the insect and the infected host usually dies within hours.

C) Mention the disadvantages of the following (12 marks):

- A) Bt control
- B) Nematodes in insect control
- C) Bio-control
- D) Classical strategy of biocontrol

BEST WISHES & GOOD LUCK

EXAMINERS	ASS.PROF. WESAM SALAMA
	DR. MAI LOTFY

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	RESET EXAMINATION FOR JUNIORS (THIRD YEAR) STUDENTS OF CHEMISTRY / ENTOMOLOGY		
COURSE TITLE	MEDICAL AND VETERINARY ENTOMOLOGY	COURSE CODE: EN 3240	
DATE:	JANUARY 2021	TERM: SECOND	TOTAL ASSESSMENT MARKS:150 TIME ALLOWED: 2 HOURS

PLEASE NOTE THE EXAM IN TWO (2) PAGES

- ANSWER THE FOLLOWING QUESTIONS

The First Question..... (22 Marks, 2 Each)

Fill in the blanks with the appropriate words

- 1) The causative organism of murine typhus is.....and it is transmitted to humans by.....
- 2) *Wohlfartia magnifica* causes.....in man and domestic animals.
- 3) Preventive measures against *Chrysomya bezziana* infestation in domestic animals include.....
- 4) The presence of bed bugs in a dwelling can be recognized from.....
- 5) The kissing bugs are attracted to their hosts by.....
- 6) Horse fly adult female inflicts a deep painful wound because the mouthparts are.....
- 7) Female mosquitoes are referred to as endophilic or exophilic depending on.....
- 8) Culicine larvae differ from those of *Anopheles* by.....
- 9) The house fly is incriminated as the vector of the causative organism of
- 10) The larvae of the black fly breed in.....

The Second Question..... (20 Marks, 2 Each)

Choose from between the brackets the correct answer and rewrite it in your answer booklet

- 1) The vector of *Yersinia pestis* is (*Xenopsylla cheopis*---*Ctenocephalides canis*---*Pulex irritans*)
- 2) Adult sand flies are active only during (the colder months---warmer months---all seasons) of the year.
- 3) Long-range attraction of black fly female is initiated by (visual stimuli-- host odor--- carbon dioxide).
- 4) (Bed bugs--- fleas---Cockroaches) harbor the food poisoning organism, *Salmonella*
- 5) *Hypoderma lineatum* is a parasite of (sheep---cattle---horses).
- 6) *Pediculus humanus humanus* is the vector of (*Rickettsia prowazekii*---*Rickettsia typhi*---*Yersinia pestis*).
- 7) The louse, *Phthirus pubis*, (transmits tuberculosis to man---is not known to transmit diseases to man---transmits *Salmonella* infections to man).
- 8) Tertiary facultative flies (are unable to initiate myiasis but which participate once an animal has been infested---initiate myiasis---. become involved in myiasis at late stage when the host animal is almost dead).
- 9) (*Tabanus* – *Chrysops* – *Simulium*) is the vector of *Loa loa*, anthrax, tularemia and *Trypanosoma evansi*.
- 10) Fumigation is a control method against (sand fly – house fly – bed bug).

The Third Question..... (40 Marks, 2 Each)

Indicate whether the following statements are true or false. Correct the false

- 1) Both males and females of Simuliidae are blood sucking of worm-blooded animals ()
- 2) Members of the Psychodinae are annoying in the house. ()
- 3) *Cimex hemipterus* occur in the tropical region. ()
- 4) The final host, or the definitive host, is the one in which the parasite reaches sexual maturity. ()
- 5) Facultative parasites are free-living insects that may live for a certain period in the vertebrate host. ()
- 6) Propagative transmission: Where the pathogen undergoes a certain cycle inside the body of the insect vector and at the same time increase in number. ()
- 7) The eggs of *Aedes* are laid in a batch but not attached to each other. ()
- 8) The cockroach, *Periplaneta americana*, is a potential transport for *trypanosoma cruzi* infecting man. ()
- 9) Tse tse fly is a nocturnal insect. ()
- 10) Gambian sleeping sickness transmitted by *Glossina morsitans* ()
- 11) The reservoir host for Rhodesian sleeping sickness is man ()

2

- 12) Nagana is a human disease transmitted by horse fly ()
- 13) *Loa loa* is a bacterial disease, transmitted by Tse tse fly ()
- 14) *Chrysomya bezziana* causes myiasis in cattle ()
- 15) The infective stage of *Loa loa* disease is metacyclic stage ()
- 16) *Oestrus ovis* is a facultative parasite of sheep and goats. ()
- 17) Horse fly is a vector of *Wuchereria bancrofti*. ()
- 18) The developmental cycle of *Plasmodium* includes the asexual multiplication in the female *Anopheles* mosquito. ()
- 19) Simuliids are indophilic and indophagic. ()
- 20) Female *Hypoderma lineatum* deposits its eggs singly on the shaft of hairs of the cattle rump and upper parts of the hind legs. ()

The Fourth Question..... (18 Marks)


- 1) What are the control measures against (9 Marks, 3 Each)
 - a) Mosquitoes. b) kissing bug c) Black fly.
- 2) Give a short note on mode of infection of the following diseases: (9 Marks, 3 Each)
 - a) Yellow fever b) Elephantiasis c) Chagas' disease.

The Fifth Question..... (50 Marks)

- A. Enumerate the factors accounting for the potency of ticks in the spread of diseases of man and animals and then explain only **TWO** disorders caused by ticks to their hosts (20 Marks)
- B. Discuss scabies infestation, transmission and pathogenesis (10 Marks)
- C. Choose the correct choice and rewrite it in your answer paper(20 Marks, 2 Marks each)
 - 1) Haller's organ of ticks is
 - a) A sensory pit on tarsi of first pair of legs b) A sensory pit on palps of first pair of legs
 - c) A sensory pit on tarsi of second pair of legs d) A sensory pit on palps of second pair of legs
 - 2) Argasid tick adults have a genital aperture.....
 - a) Between coxa IV b) Between coxa II c) Between coxa I. d) Haven't genital opening
 - 3) Number of plates found in Ixodid ticks are.....
 - a) One ventral, two anals and one laterals). b) One ventral, one anal and two laterals
 - c) Two anals and two laterals d) Two ventrals and two laterals
 - 4) Acariasis is caused by
 - a) Tick infestation b) Tick and mite infestation c) Mite infestation d) All of these
 - 5) Starting with the egg and ending with the adult, the correct order of mite development is.....
 - a. Egg, Larva, Deutonymph, Protonymph, Tritonymph, Adult
 - b. Egg, Larva, Tritonymph, Protonymph, Deutonymph, Adult
 - c. Egg, Larva, Deutonymph, Tritonymph, Protonymph, Adult
 - d. Egg, Larva, Protonymph, Deutonymph, Tritonymph, Adult
 - 6) Rocky Mountain spotted fever is
 - a) A rickettsial disease transmitted by hard ticks b) A bacterial disease transmitted by soft ticks
 - c) A protozoan disease transmitted by mites d) A viral disease transmitted by hard ticks
 - 7) Soft Ticks are vectors of.....
 - a) Borreliosis b) Anaplasmosis c) Tick-borne relapsing fever d) Babesiosis
 - 8) Vectors of bovine and human babesiosis are.....
 - a) Psoroptid mites b) Ixodid ticks c) Argasid ticks d) Sarcoptid mites
 - 9) In the three-host ixodid tick life cycle
 - a) Larva on small rodents, nymph on larger mammal and adult on another large mammal.
 - b) Larva on larger mammal, nymph on small rodents and adult on another large mammal.
 - c) Larva on small rodents, nymph on larger mammal, adult on the same large mammal.
 - d) Larva on large mammal, nymph on another larger mammal, adult on small rodents.
 - 10) Rotation of pastures has been used in the control of the
 - a) Argasid ticks b) Multihost ixodid ticks c) One-host ixodid tick d) All of these

BEST WISHES

EXAMINERS	PROF. IBRAHIM MOHAMED BAKR	DR. MOHAMED SOLIMAN
	DR. IMAN MOHAMED ELHUSSENY	

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION for third Year students OF Chemistry and Entomology		
	COURSE TITLE	Insect Behavior	COURSE CODE: EN3141
DATE: MARCH 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

(يتكون الامتحان من صفتين)

Part I (75 Marks)

1. **Fill in the blanks with the appropriate words : (15 Marks, 3 Marks each)**
 - a. The external limiting factors of insect flight are.....and.....
 - b.is flight of insects in a direction and for a distance over which they have control and which result in temporary or permanent change in habitat.
 - c. Flight activity is divided into.....and.....
 - d. The initial incapability of insects to fly is related to.....and.....
 - e. If the wind-speed is high over long periods flight occurs mainly during
2. **Indicate whether the following statements are true or false: (15 Marks, 3 each)**
 - a. Night flights in *Schistocerca* starts at about half-an-hour after sun set. ()
 - b. Most insects tend to fly when the wind speed is high. ()
 - c. Insects land although the environmental conditions remain suitable for flight. ()
 - d. All dragon fly species make regular transoceanic migrations. ()
 - e. The very sudden disappearance of winged insects in an area where they were known to be present previously is an evidence of migration ()
3. **Describe the annual migration of the monarch butterfly (15 Marks)**
4. **Discuss the Factors limiting flight activity (15 marks)**
5. **What are the evidences of insect migration? (15 marks)**

Part II (Total: 75 Marks)

- 1- **Give the scientific term of each of the following (Total 30 marks, 3 mark for each):**
 - a. It is the coordinated movements that occur in response to an external stimulus. ()
 - b. It is the change in a response to a stimulus that does not involve associating the presented stimulus with another stimulus. ()
 - c. Orientation in which the speed of movement of the individual is dependent upon the intensity of the stimulus. ()
 - d. When an organism continuously samples the environment to determine the

- direction of a stimulus. ()
- e. Learning without obvious reward. ()
 - f. A condition of immobilization where all reflexes of the organism for locomotion and the correction of posture are inhibited. ()
 - g. It is a semiochemical, emitted by an organism in a way that benefits an individual of another species which receives it, without benefiting the emitter ()
 - h. The analysis of the movements of the whole organism into a series of reflexes or observed correlation between stimulus and response. ()
 - i. Learning results from an association of sensory experience. ()
 - j. The process of accepting or rejecting a host for feeding or oviposition.()

2- Write short notes about the followings


- a. Relation of simple responses to biology (5 marks)
- b. Host location and oviposition on plants according to the basis of host attributes (10 marks)
- c. Succession and inhibition of responses in *Stomoxys sp.* (10 marks)
- d. Waggle dancing in bees' life (10 marks)
- e. Host discrimination and super-parasitism of insect parasitoid (10 marks)

Good luck ☺!

Examiners

Prof. Dr. Amal Seif

Prof. Dr. Mervat Abou Seada

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION FOR JUNIORS (THIRD YEAR) STUDENTS OF SPECIAL ENTOMOLOGY		
COURSE TITLE	LIVESTOCK ENTOMOLOGY		COURSE CODE: EN 3103
DATE: JAN, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:150	TIME ALLOWED: 2 HOURS

PLEASE NOTE THE EXAM IN TWO (2) PAGES

ANSWER THE FOLLOWING QUESTIONS

First Question..... (40 Marks, 4 Marks Each)

Choose the correct answer and rewrite it in your booklet

- a) Eastern Equine Encephalomyelitis (EEE) is a (viral - bacterial - nematode) disease and is transmitted by (mosquitoes – bugs - beetles).
- b) Rift Valley fever is a (viral- nematode- bacterial) disease and is transmitted by (*Aedes* sp. - *Culex* sp. - *Anopheles* sp.).
- c) The diphtheritic form of fowl pox is associated with higher mortality in birds as it causes (yellow – white - red) canker lesions to develop within the (throat - abdomen- legs) of birds.
- d) Wesselsbron virus causes relatively high mortalities in (lambs – horses - dogs).
- e) Dog heart disease is caused by (nematode- virus- bacteria) and transmitted by (mosquitoes- Lice-Fleas).
- f) Bluetongue disease occurs in (sheep – dogs - cats) and caused by (midges -fleas- mosquitoes).
- g) Epizootic hemorrhagic is a (viral – bacterial - protozoal) and is found in (deer-cats-cattle).
- h) African horse sickness virus is transmitted by (midges – bugs - fleas) and affects (50 – 30 - 20) % mortality in mules.
- i) Visceral leishmaniasis is caused by (*Leishmania infantum* - *Leishmania major*- *Leishmania tropica*) and is transmitted by (sand fly-black fly - house fly).
- j) *Leishmania aethiopica* is causative agent of (cutaneous - visceral-nasopharyngeal) leishmaniasis and (mice – cats - dogs) are the reservoir hosts for this disease.

Second Question..... (20 Marks, 10 Marks Each)

- a) Explain in detail the procedures required for integrated pest management.
- b) Mention in detail the methods used in pest management?

Third Question..... (30 Marks, 6 Marks Each)

Writes short notes on the following animal diseases.

- a) Vesicular stomatitis
- b) Surra disease
- c) Tularemia
- d) Equine Infectious Anemia
- e) African horse sickness

Fourth Question..... (10 Marks)


- **Classify the type of myiasis from entomological and clinical point of view.**

The Fifth Question..... (50 Marks)

- A. Discuss tick host finding and feeding and then explain two-host life cycle of ticks**
- B. In details and concerning the morphological characteristics and its veterinary importance, explain ear mite, *Otodectes cynotis*(16 Marks)**
- C. Choose the correct choice and rewrite it in your answer booklet.... (10 Marks, 1 Each)**
- 1) The special structure in tick mouths that allows them to attach firmly to a host is called...
a) Hypostome b) Hydrastome c) Gastrostome d) Myriastome
 - 2) Tick control of large animals can be enhanced with.....
a) Vegetation management b) Dipped in acaricide c) Dusted with acaricide d) All of these
 - 3) Ixodid tick adults have Pair of spiracles.....
a) Between coxa IV b) Between coxa II c) posterolateral to coxa IV d) Between coxa I
 - 4) Genital aperture of argasid ticks locates.....
a) Between coxa IV b) Between coxa I c) posterolateral to coxa IV d) Between coxa II
 - 5) Chicken mite or red mite of poultry, *Dermanyssus gallinae* is a vector of the following diseases Except
a) Rickettsial b) Newcastle virus c) Fowl cholera d) Fowl pox virus
 - 6) After mating female of *Demodex canis* lays eggs.
a) On the skin b) In the hair follicle
c) In the sebaceous gland d) All of these
 - 7) Male has suckers on ends of the first, second, and fourth pairs of legs, but Female has suckers only on the first and second pairs of legs are characteristics of.....
a) *Otodectes cynotis* b) *Dermanyssus gallinae*
c) *Omithonyssus sylviarum* d) *Notoedres cati*
 - 8) Female has a lone star-like spot on scutum, but male and immature tick lack this spot is characteristic feature of.....
a) *Dermacentor albipictus* b) *Amblyomma americanum*
c) *Ixodes scapularis* d) *Argas persicus*
 - 9) Starting with the egg and ending with the adult, the correct order of mite development is.....
a) Egg, Larva, Deutonymph, Protonymph, Adult
b) Egg, Larva, Protonymph, Deutonymph, Adult
c) Egg, Larva, Deutonymph, Protonymph, Adult
d) Egg, Larva, Protonymph, Deutonymph, Adult
 - 10) Winter tick is.....
a) A vector of bacteria b) A vector of viruses
c) A vector of Protozoa d) Not a vector of pathogenic organisms

BEST WISHES

EXAMINERS	PROF. AMAL IBRAHIM SEIF	PROF. IBRAHIM MOHAMED BAKR
	DR. HANAA ELBRENSE	

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION for third Year students OF Chemistry and Entomology		
DATE: MARCH 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150	COURSE CODE: EN3141 TIME ALLOWED: 2 HOURS

(يتكون الامتحان من جزئين)

Part I (75 Marks)

1. Fill in the blanks with the appropriate words : (15 Marks, 3 Marks each)

- The external limiting factors of insect flight are.....and.....
-is flight of insects in a direction and for a distance over which they have control and which result in temporary or permanent change in habitat.
- Flight activity is divided into.....and.....
- The initial incapability of insects to fly is related to.....and.....
- If the wind-speed is high over long periods flight occurs mainly during

2. Indicate whether the following statements are true or false: (15 Marks, 3 each)

- Night flights in *Schistocerca* starts at about half-an-hour after sun set. ()
- Most insects tend to fly when the wind speed is high. ()
- Insects land although the environmental conditions remain suitable for flight. ()
- All dragon fly species make regular transoceanic migrations. ()
- The very sudden disappearance of winged insects in an area where they were known to be present previously is an evidence of migration ()

3. Describe the annual migration of the monarch butterfly (15 Marks)

4. Discuss the Factors limiting flight activity (15 marks)

5. What are the evidences of insect migration? (15 marks)

Part II (Total: 75 Marks)

1- Give the scientific term of each of the following (Total 30 marks, 3 mark for each):

- It is the coordinated movements that occur in response to an external stimulus. ()
- It is the change in a response to a stimulus that does not involve associating the presented stimulus with another stimulus. ()
- Orientation in which the speed of movement of the individual is dependent upon the intensity of the stimulus. ()
- When an organism continuously samples the environment to determine the

- direction of a stimulus. ()
- e. Learning without obvious reward. ()
 - f. A condition of immobilization where all reflexes of the organism for locomotion and the correction of posture are inhibited. ()
 - g. It is a semiochemical, emitted by an organism in a way that benefits an individual of another species which receives it, without benefiting the emitter ()
 - h. The analysis of the movements of the whole organism into a series of reflexes or observed correlation between stimulus and response. ()
 - i. Learning results from an association of sensory experience. ()
 - j. The process of accepting or rejecting a host for feeding or oviposition.()

2- Write short notes about the followings


- a. Relation of simple responses to biology (5 marks)
- b. Host location and oviposition on plants according to the basis of host attributes (10 marks)
- c. Succession and inhibition of responses in *Stomoxys sp.* (10 marks)
- d. Waggle dancing in bees' life (10 marks)
- e. Host discrimination and super-parasitism of insect parasitoid (10 marks)

Good luck ☺!

Examiners

Prof. Dr. Amal Seif

Prof. Dr. Mervat About Seada

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAM FOR JUNIORS (THIRD YEAR) STUDENTS OF CHEMISTRY/ENTOMOLOGY			
	COURSE TITLE:	INSECT PATHOLOGY		COURSE CODE: EN 3143
DATE:	JANUARY, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:150	TIME ALLOWED: 2 HOURS

الامتحان في صفحتين

ANSWER THE FOLLOWING QUESTIONS

First Question..... (20 Marks, 2 Each)

Define the following terms:

- a- Pathogen b- Disease c- Pathogenesis d- Contagious disease
e- Acute disease f- Horizontal transmission g- Epizootiology h- Dose
i- Infestation j- Infection

Second Question..... (20 Marks, 2 Each)

Fill in the blanks with the appropriate words

- a) The amicrobial diseases are those in which
- b) Nutritional diseases refer to abnormalities caused by
- c) Lack or insufficiency of protein and essential amino acids causes.....
- d) Diets free of folic acid produced *Aedes aegypti* larvae that were not
- e) Tumors were considered as
- f) The irregularities in
- g) tumor cells include.....,,
- h) The incidence of ovarian tumor was increased 26-folds by
- i) Anoxia lasting for hours produced benign tumors in adult insects.
- j) Distention results when
- k) High temperature negatively affects insects as.....

Third Question..... (60 Marks, 6 Each)

Write short notes on the followings.....

- a) American foulbrood disease
- b) Milky disease of the Japanese beetle
- c) the use of bacillus thuringiensis in biological control
- d) Cytoplasmic polyhedrosis virus
- e) Polydnaviridae
- f) *Empusa muscae*
- g) *Coelomomyces* infection
- h) Muscardine of the silkworm
- i) Efficacy of fungi in the field
- j) Abiotic factors affect fungi

Fourth Question..... (50 Marks)


- I. Illustrate a Diagram showing the major and minor pathways of transmission for insect-parasitic microsporidia and then discuss the pathology and symptoms of microsporidiosis in honeybee (15 Marks)
- II. Discuss with illustrations the life cycle of Heterorhabditid and Steinernematid nematodes in insects then explain *Mermis subnigrescens* infection in grasshoppers, regarding to its development and symptoms of infection (15 Marks)
- III. Choose the Correct Answer from Between the Practices (20 Marks, 2 Each)
 - 1) *Leptomonas pyrrocoris* infects..... (Larval stage only - Pupal stage only- Adult stage only- All stages) of the mealworm, *Tenebrio molitor*.
 - 2) Parasite-induced castration of Mayfly is due to infection with (Microsporidian – Flagellate – Ciliate – Amoeba) parasites.
 - 3) The border of the gut wall of the corn borer is abnormal in appearance due to infection with..... (*Leptomonas pyraustae* – *Leptomonas pyrrocoris* – *Blastocrithidia triatoma* – *Trypanosoma lewisi*)
 - 4) *Blastocrithidia triatoma* disturbs its triatomine host by reducing (The starvation resistance- Cellular immune response- Adult life span and reproduction rate – All of them).
 - 5) Death of a *Malpighamoeba mellificae*-infected bee results from..... (Loss of Malpighian tubes function - Loss of the midgut function – Deformation of the muscular tissues – None of these).
 - 6) Pebrine disease of silkworms caused by..... (Ciliate – amoebic – Sporozoan – flagellated) infection
 - 7) The nematode infections in insects affect the sex ratio by producing (More males than females – Only females – Only males - More females than males)
 - 8) *Romanomermis culicivorax* juveniles parasitize mosquitoes (larvae – pupae – Adults – All of these).
 - 9) The types of *Nosema bombycis* spores are..... (Three – Four – One – Two)
 - 10) *Tetrahymena dimorpha* parasitize the hemocoel of..... (Larvae - Pupae - Adults – All stages) of the black fly.

BEST WISHES

EXAMINERS	PROF. IBRAHIM MOHAMED BAKR	PROF. MOHAMED SOLIMAN
	DR. HANAA ELBRIENSE	

TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF ZOOLOGY

EXAMINATION FOR JUNIORS (THIRD YEAR) STUDENTS OF SPECIAL ENTOMOLOGY

	COURSE TITLE	PROTOZOOLOGY AND MOLECULAR BIOLOGY OF PROTOZOA	COURSE CODE: EN 3107
DATE:	11/3/ 2020	TERM: FIRST	TOTAL ASSESSMENT MARKS:150
			TIME ALLOWED: 2 HOURS

PLEASE NOTE THE EXAM IN TWO (2) PAGES

- ANSWER THE FOLLOWING QUESTIONS

THE FIRST PART..... (45 Marks)

A - Decide whether the following statements are true or false and correct the wrong (20 Marks, 2 Each)

- 1- The movement of cilia is due to the contraction of peripheral fibrils. ()
- 2- The continuous internal skeleton formed only in radiolarians. ()
- 3- Infective stage of *Plasmodium* is sporozoite. ()
- 4- The blepharoplast is regarded as the starting point of the flagellum. ()
- 5- Bradyzoites present in the brain. ()
- 6- Protozoa are unicellular prokaryotic micro-organisms. ()
- 7- Loriculae are composed of about 6-8 bundles of flagella. ()
- 8- Protozoa can only live as free living. ()
- 9- Use of screens on houses to keep out mosquitoes can control of toxoplasmosis. ()
- 10- Sporogony of *Plasmodium* spp. takes place in mosquito mid-gut cavity. ()

B - Choose the correct answer and rewrite in your booklet..... (10 Marks, 1 Each)

- 1- Flagella are delicate thread like extensions of
 a- protoplasm b- nucleus c- both a- and b-.
- 2- is the most primitive type of organic skeleton.
 a- tectin b- cellulose c- chitin
- 3- Host inflammatory reactions of *Plasmodium* spp. are initiated by.....
 a- rupture of infected RBCs b- development of RBCs c- rupture of infected white blood cells
- 4- causing malignant tertian malaria.
 a- *Plasmodium vivax* b- *Plasmodium falciparum* c- *Plasmodium malaria*
- 5- Each sporocyst of *Toxoplasma gondii* contains.....sporozoites
 a- two b- four c- both a- and b-.
- 6- is the definitive host of *Toxoplasma gondii*.
 a- man. b- cat. c- mouse.
- 7- Tachyzoites describe the stage that rapidly multiplied in
 a- any cell of intermediate host. b- non intestinal cells of final host. c- both a- and b-.
- 8- The radiolarian skeleton is.....
 a- asteroid. b- spherical. c- both a- and b-.
- 9- What is the function of Pseudopodia?.....
 a- Movement and feeding b- formation of shell chambers c- both a- and b-.
- 10- Fibrillar structure of *Trichodina* is developed within the.....
 a- mouth. b- attaching disc. c- both a- and b-.

C - Complete the missing parts with appropriate words (15 marks,3 Each)

- 1- Endemicity of human malaria is determined by
- 2- Pathology of *Plasmodium* spp. showed in and
- 3- Illustrate only two ways of *Toxoplasma gondii* transmission and.....
- 4- Inorganic skeleton composed of..... and
- 5- In the rectilinear biserial shell type ; the lorica are

THE SECOND PART..... (45 Marks)

I. Give a short account on the followings..... (20 Marks, 5 Each)

- 1) Binary and multiple fission modes of reproduction.
- 2) Main characters of class Kinetoplasta.
- 3) Principle of hemagglutination test

4) Differentiation between 2 related protozoans using RFLP technique.

II. Complete the following sentences..... (15 Marks, 1 Each blank)

- 1) Protozoa have excretory apparatus in the form of 1., 2., & 3.
- 2) The sexual reproduction in is carried out by autogamy and conjugation, which are depend mainly on the role of
- 3) Based on their development in insects, there are 2 groups of trypanosomes 1..... & 2.....
- 4) In *Leishmania tropica* life cycle, there are 2 hemoflagellate forms 1. & 2.
- 5) *Trypanosoma gambiense* can be diagnosed directly by, & indirectly by
- 6) The materials used to carry out PCR reaction are 1., 2., 3., & 4.

III. Choose the correct answer and rewrite it in your booklet..... (10 Marks, 1 Each)

1. Feeding by more than one method is called nutrition.
 - a) coprozoic
 - b) saprozoic
 - c) mixotrophic
 - d) holophytic
2. Differentiation of a small portion from a parent to form new individual refers to...
 - a) endodygeny
 - b) plasmotomy
 - c) regeneration
 - d) budding
3. In sexual reproduction, union of 2 dissimilar gametes is called
 - a) hologamy
 - b) merogamy
 - c) anisogamy
 - d) isogamy
4. *Leishmania donovani* is the causative agent of disease.
 - a) sleeping sickness
 - b) Kala-azar
 - c) Chagas' disease
 - d) oriental sore
5. Nagana is a disease of African ruminants, and it is caused by
 - a) *T. b. gambiense*
 - b) *T. b. brucei*
 - c) *Leishmania tropica*
 - d) *L. donovani*
6. develops in the hindgut of insect intermediate host.
 - a) *Trypanosoma b. brucei*
 - b) *T. b. gambiense*
 - c) *T. b. rhodesiense*
 - d) *T. cruzi*
7. The following forms are present in *Trypanosoma cruzi* life cycle EXCEPT
 - a) trypomastigote
 - b) amastigote
 - c) chaenomastigote
 - d) epimastigote
8. Infective stage of *Leishmania* species is found in
 - a) tsetse fly
 - b) sandfly
 - c) kissing bug
 - d) mosquito
9. The number of amplified sequences of DNA by PCR after 5 cycles is
 - a) 10
 - b) 16
 - c) 32
 - d) 64
10. The following processes are included in each PCR cycle EXCEPT
 - a) DNA denaturation
 - b) DNA extraction
 - c) primers annealing
 - d) sequence extension

THE THIRD PART..... (60 Marks)

I. Give a short account on the followings..... (20 Marks, 5 Each)

- 1) Physical barrier defenses of insects against the invading protozoa
- 2) the capsule/nodule formation in insects against the invading parasites (Only by Schematic diagram)
- 3) Humoral immune response of insects against the protozoa
- 4) Moving target strategy of protozoa to evade the immune attack of insects.

II. Define the following terms..... (20 Marks, 4 Each)


- 1) Pattern-recognition receptors in insects
- 2) Salivary gland escape barrier
- 3) Smokescreen evasion strategy
- 4) Hematopoiesis in insects
- 5) Melanization in insects

III. Complete the missing blanks with appropriate words(20 Marks, 2 Each blank)

- 1) *Leishmania* parasites escape the midgut barrier by forming which form a over the entire cell surface.
- 2) in digestive tracts prevents attaching pathogens in the gut lumen and prevents reaching to the gut mucosa.
- 3) The insect haemocytes involved in immune response against protozoa are: 1) 2) and 3)
- 4) The ookinetes of *Plasmodium* can be killed and eliminated by reactions of the mosquito
- 5) Phagocytosis of insect haemocytes occurs in three steps: 1), 2) and 3)

BEST WISHES

EXAMINERS	PROF. IBRAHIM MOHAMED BAKR	PROF. YASER DAR
	PROF. HOWAYDA ABOSHFAY	

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	Examination for Third Year students of Chemistry and Entomology		
	COURSE TITLE	CHEMICAL ECOLOGY	COURSE CODE: EN3145
DATE: 21/2/2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

(ينكون الامتحان من صفتين)

Part I (50 Marks)

1-Indicate whether the following statements are true or false, and correct the wrong part (Total: 5 marks)

- Bee pollinated flowers are small or grouped into little inflorescence. ()
- Moth-pollinated flowers are red, while fly pollinated flowers are yellow. ()
- Condensed tannin are polymers composed of 2 to <50 flavonoid molecules, inhibit herbivore digestion. ()
- Phenolics are stored in inactive forms in plant vacuoles and become toxic when herbivores eat the plant and break cell membranes. ()
- Bombardier beetles shoot an explosive noxious blast when disturbed ()

2-Write the scientific term of each of the following statements. (Total: 5 marks)

- Self-advertising, usually through color, that an organism is poisonous or can harm a predator.
- A generic term used for a chemical substance or mixture that carries a message.
- When insects educatively injuring the attacker or killing it.
- It has the same basic structure as insect molting hormones and thus interferes with molting cause death of the insect herbivore.
- Plant compounds that can be used as "natural" insecticides in agricultural practices or in horticulture.

3- Give an account on each of the following (Total : 40 marks)

- Bees and flies pollination syndrome (5 marks)
- Insect defensive chemicals work in one of four ways: Discuss two of them (5 marks)
- Applications of Chemical ecology in insect pest management (10 marks)
- Functions of plant secondary metabolites (5 marks)
- Alkaloids as plant SM (5 marks)
- Elicitation of plant responses and HIPV after herbivore attack (10 marks)

Part II (50 Marks)

1 - Give the scientific term for each of the following sentences: (10 marks)

- Are semiochemicals that acting between members of the same species.

- b) An informiochemical in ants are commonly as metabolic waste-products excreted by the poison gland.
- c) Are often multi-component, usually composed of small and highly volatile, non-persistent compounds such as mono-terpenes or acetates that are readily dispersed throughout the aggregation
- d) volatile produced by a host-plant to attract parasitoids
- e) pheromones evoke a prolonged or long term physiological effects on the receiver mediated by the neuroendocrine pathways

2. Fill in the blanks below with the appropriate words (15 mark)

- 1- Types of chemoreceptive (olfactory) sensilla are, and
2. Silk moth *Bombyx mori* emits a sex pheromone, called to attract males from a pair of sacs called that are found on
3. an endocrine gland generates juvenile hormone via nervous system
4. Two main ecological cues are provided by kairomones; they generally either indicate a.....for the receiver, or give of the presence of a predator.
5. The males of Lepidoptera often produce scent from glands which are commonly associated with scales are known as
7. Semiochemical uses,and
8. "Anti-aggregation" pheromones calledand
9. Insect use chemical communication for,&.....

4. Give an account about (25 mark)


- a. "Amazing example of tricky sexual signaling occurs in bolas spiders", Discuss with mention the type of pheromone secreted (10 mark)
- b. Discuss the Detection Process by sensilla with digram of the sensillum parts. (10 mark)
- c. Comparison between parasites and parasitoids (5 mark)

GOOD LUCK ☺!

EXAMINERS

Prof. Dr. Mervat Abou Seada

Dr. Raghda Zuhair

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAM FOR JUNIORS (THIRD YEAR) STUDENTS OF ENTOMOLOGY		
COURSE TITLE:	FORENSIC ENTOMOLOGY	COURSE CODE: EN 3105	
DATE:	5-1-2021	TERM: FIRST TOTAL MARKS: 150	TIME ALLOWED: 2 HOURS

Exam in two pages

Answer the following questions:

1- First question (20 marks, each 4 marks)

Complete the following sentences

a. Forensic entomology is

.....

b. The Casper's Dictum rule is

.....

c. The stage in which most of the Diptera larvae migrate away from remains, leaving behind bones, cartilage, hair, small portions of tissue is called

d. By products of decay (BOD) is

.....

e. Apneumonones is

.....

2- Second question (55marks, each 11 marks)

A-Mention in details the subfields of forensic entomology? (5 marks)

B- How insects can be used in crime investigation? (5marks)

C-How to Determine the postmortem time from medical view? (5 marks)

D. Write on the variables affecting insect succession pattern? (5 marks)

E-Define the necrophagous insects ?

3- Third question (30 marks, each 15 marks)

A-Mention the factors effecting on the rate insect development?

B- Define the accumulate heat, and calculate the temperature for insect to develop in 20 days and need 220 ADD where the minimal threshold temperature is 21C°?

4- Fourth Question: answer the following (45 marks)

A- Death scene procedure (10 marks)

B- Has the body moved after death? (10 marks)

C- Use of Forensic Entomology in War crime and Contraband Trafficking. (10 marks)

D- Only two of cases history involving Forensic Entomology in crime investigation. (15 marks)

God bless you

EXAMINERS	PROF. DR ELSAIED NAEIM	DR. HANAA ELBRIENSE
-----------	------------------------	---------------------