	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	Examination for 4th level students of CHEM/ENTOMOLOGY			
	COURSE TITLE:	Insect Genetics		COURSE CODE: EN4256
DATE:	29 DEC, 2020	TERM: متطلب تخرج	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

First Question: Define (60 marks)

Q1-a: Write on the following briefly with drawings when necessary (30 marks):

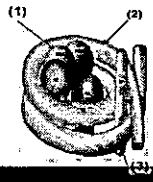
1. Chromosomal structure of fruit fly
2. Cell determination during insect development
3. The models of cell determination in insect genetics
4. Functions of maternal genes during insect development
5. Draw the structure of prokaryotic gene and nucleotides.
6. Base excision DNA damage repair

Q1-b: Define the following briefly (20 marks):

a) Okazaki fragments b) RNA primer c) DNA Ligase d) 6,4-pyrimidine photoproducts

Q1- c: What is the following structure (10 marks):

- Write the details (1), (2) and (3) of the following drawing:
- What is the core and linker histones
- How many base pairs are involved within each nucleosome?



2nd Question: MCQ (40 marks)

Write down the correct answer in the answering sheet.

1) **Which of the following nucleotide bases is found only in RNA, not in DNA?**
A) guanine B) adenine C) thymine D) uracil E) cytosine

2) **The bond between a phosphate group and the ribose sugar group in RNA is called:**
A) Amide bond B) Peptide bond C) Phospho-unhydride bond
D) Phosphodiester bond

3) **What provides the energy that drives the addition of nucleotides to a growing DNA chain during replication?**
A) The release of a pyrophosphate B) The hydrolysis of ATP
C) The hydrolysis of a pyrophosphate D) The hydrolysis of GTP

4) **Which of the following is NOT a source of DNA damage?**
A) Chemicals B) Replication C) Methylation D) Ionizing radiation

5) **The sequence of a piece of DNA reads as 5'- CGATACC – 3', what is the complementary DNA sequence to this?**
A) 5' – GGAAUUC – 3' B) 5' – GCAAUTC – 3'
C) 5' – GGAATTC – 3' D) 3' – GCTATGG - 5'

6) **The TATA box is located in?**
A) transcription termination sites B) the promoter C) reverse transcriptase
D) operator binding sites

7) The process by which DNA transfers its information to RNA is called:
A) transmutation B) transmittal C) translation D) transcription

8) DNA ligase does which one of the following?
A) joins Okazaki fragments to the DNA chain B) catalyzes DNA replication
C) enhances transcription D) methylates DNA

9) Which of the following proteins are found at the DNA replication fork?
A) sliding clamp B) helicase C) single-stranded binding protein D) A+B+C

10) How insect embryonic cells become committed to one particular cell fate is considered:
A) Organization B) Differentiation C) Development D) Fertilization

11) Cell division, cell differentiation and morphogenesis are processes of:
A) Insect fertilization B) Insect development C) Insect transformation D) Insect mating

12) The first few embryonic cells that give rise to insect different cell types:
A) Totipotent B) Pleuripotent C) Totipotent & pleuripotent D) None of them

13) During insect development, genetic transcription factors assist in:
A) cell-cell signals B) cell differentiation C) Metamorphosis D) All of them

14) Signal molecules from insect embryonic cells which cause transcriptional changes in nearby target cells by:
A) Sex determination B) Pattern formation C) Cell positioning D) Induction

15) The development of a spatial organization of tissues and organs is:
A) Sex determination B) Pattern formation C) Cell positioning D) Induction

16) Molecular signals that controls and tells a cell its place relative to the body's axes and other cells
A) Sex determination B) Pattern formation C) Cell positioning D) Induction

17) In Drosophila, what activates the transcriptional factors and receptors?
A) The maternal-effect genes B) Zygotic genes C) The zygotic nucleus D) None is correct

18) What plays a major role in the reprogramming of cell differentiation is:
A) The nucleus B) The DNA C) Cytoplasm D) Ribosomes

19) When each developing insect cell contains its own unique set of determinants, this is considered:
A) Cell-cell interaction B) Positional information C) Regulatory pattern D) Mosaic pattern

20) The drosophila zygote nucleus undergoes a series of divisions to form:
A) Blastula B) Ooplasm C) Giant cell D) 512 cells

Examiner	Prof. Elsayed I Salim.

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	Examination for 4th level students of CHEM/ENTOMOLOGY			
	COURSE TITLE:	Insect Genetics		COURSE CODE: EN4256
DATE:	29 DEC, 2020	TERM: متطلب تخرج	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

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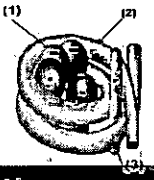

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Examiner	Prof. Elsayed I Salim.

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF CHEMISTRY/ENTOMOLOGY			
	COURSE TITLE:	Biological monitoring of fresh water system		COURSE CODE: EN 4151
DATE :24	MARS, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2 HOUR

Notice: rewrite the answers on your notebook

Answer the following questions:

1. Identify the following:
   Biological monitoring - *Toxicity bioassays* - ecosystem indices – bioindicator – pristine site. (15marks)
2. Write on the types of Reference site. (5marks)
3. Explain the concept of assessment. (5maks)

2. Fill in the blanks with the appropriate words: (20 Marks)

1-Total dissolved solids is an important parameter for drinking water because high TDS values may result in.....

2- The shallow white plastic pans are used for.....

3- To preserve the collected samples we need.....

4- May fly naiad is from.....feeding group, because they feed on.....

5- Stream flow (discharge) is the.....

6- ..... nymphs decline as temperature increases.

7- As particulate material including sediment increases, certain species of.....increase in relative abundance.

8- Pesticide runoff leads to.....

9- Conductivity is an indicator of the amount of..... in a stream.

10- Standard physico-chemical water quality measures provide.....

3. Indicate whether the following statements are true (T) or false (F) and correct the false one: (5 Marks)

1- Biomonitoring can entirely replace standard physic-chemical water quality methods. ( )

2- if biological index (Sum score)is more than 20 indicates poor degraded water quality&habitat problems needing repair. ( )

3- Crayfish are tolerant category from invertebrate indicator groups.( )

4- Back end of larva of crane fly has two tiny hooks and short hairs. ( )

5- Cold water can hold more dissolved oxygen than warmer water ( )

Good Luck

EXAMINERS	DR. AHMED M. El BOSSERY DR. IMAN M. EL HUSSEINY

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF ENTOMOLOGY			
	COURSE TITLE:	Insect physiology		COURSE CODE: EN 4101
DATE 24	MARCH, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:150	TIME ALLOWED: 2 HOURS

Answer the following questions: Notice! The examination consists of two pages.

1. Choose from between the brackets the correct answer (Total 50 Marks, 2.5 Mark each)

1. Non-fibrillar type of muscle. When stimulated by a single nervous impulse there is usually a single muscle contraction.

a) Synchronous muscles b) Larval muscles c) Asynchronous muscles

2. Is of the fibrillar type of muscle. When stimulated by a single nervous impulse it can undergo successive contractions. Muscle that must contract rapidly.

a) Existing Larval muscles b) Asynchronous muscles c) Larval muscles

3. Thus, all non-innervated muscles are probably controlled by blood borne factors.

a) Neurogenic contraction b) Myogenic contraction c) Neuromuscular junctions

4. Contractions stimulated by the release of a neurotransmitter, which in the case of muscles appears to be Lglutamate.

a) Myogenic contraction b) Neurogenic contraction c) Neuromuscular junctions

5. Proctolin-effect on visceral muscles of the hindgut. Is a neurotransmitter and neurohormone?

a) Myostimulatory peptides b)Myoinhibitory peptides c)Myostimulatory and cardioactive peptides

6. Dromysuppressin on crop and probably heart.

a) Cardioactive peptides b) Myoinhibitory peptides c) Myostimulatory peptides

7. Strech receptors send inhibitory feedback to brain and feeding ceases-food is later forced into midgut.

a) Musca domestica crop b) Dipteran crop c) Ptilinum

8. Contraction frequency increases with volume ingested probably due to Strech activated ion channels.

a) Crop contractions b) Dromyosuppressin c) Dipteran crop

9. Wing movement, and most of flight, is controlled by

a) Direct flight muscles b) Indirect flight muscles c) All above

10. Use of input from antennae to the mechanisms ("muscles") to control locomotion.

a) Direct muscles b) Ptilinum c) The Cricket Robot

11. Nerve cells are

a) Conducting cells that surround neurons and help to protect neurons and maintain stable ionic environment

b) None conducting that surround neurons and help to protect neurons and maintain stable ionic environment

c) Conducting cells that transduce transmit or process nerve impulses

12. Glial cells are

a) None conducting supporting cells that surround neurons and help to protect neurons and maintain stable ionic environment

b) None conducting that transduce transmit or process nerve impulses

c) Conducting supporting cells that surround neurons and help to protect neurons and maintain stable ionic environment

13. Axon is

a) The greater part of the neuron and their processes do not occur singly but are aggregated in a series of segmental ganglia

b) A slender cell extension arises from the cell body of the neuron which transmits nerve impulses from one cell to the next

c) The fibril arising directly from the nerve cell body

14. Dendrites

a) Both axon and dendrites end in fine branching fibrils

b) They are fibrils arising directly from the nerve cell body. They are specialized for the reception of the stimuli and transmitting impulses towards the central cell body

c) They are united by longitudinal connectives which constitute the central nervous system

15. Ganglion

a) They are united by longitudinal connectives which constitute the central nervous system

b) The greater part of the neuron and their processes do not occur singly but are aggregated in a series of segmental ganglia

c) Lateral branches arising from the axon generally near its origin

16. Multipolar neurons

a) Have many projections extending from the soma. However, each has only one axon.

b) Have many projections extending from the soma. However, each has two axons.

c) Have many projections extending from the soma. However, each has many axons.

17. Synapsis

a) The site at which the axon of one neuron contacts the dendrite of another and the point which neurons receives information from or conveys it to other cells

b) A nerve generally includes both motor and sensory extensions

c) They are the lateral extensions of the protocerebrum to the compound eyes

18. The first ganglion is the

a) Thoracic ganglia b) Suboesophageal ganglion c) Abdominal ganglia

19. There are three....., but in some insects they fuse to form a single ganglion.

a) Suboesophageal ganglion b) Abdominal ganglia c) Thoracic ganglia

20. The largest number of ganglia are the ..... which present in the abdomen.

a) Thoracic ganglia b) Abdominal ganglia c) Suboesophageal ganglion

2.Write short note on each of the following (Total 100 Marks):

a. The Heartbeat diagram of insect.

b. Lipoprotein composition at plasma of insect.

c. Balance of salts at fresh and saltwater insects.

d. Respiration in aquatic insects.

e. Plasma composition of nitrogen degradation products.

f. The most types of hemocyte at insects and its functions.

g. Redox potential in digestion of insect.

h. Extra–intestinal digestion of some insects.

i. Phenoloxidase enzyme and it is immune function.

j. Cellular immune responses at Locust.

EXAMINERS	**PROF. DR. AFAF M. EL-ATTRISH**	**DR. MOHAMED SHAHEN**

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	EXAMINATION for seniors (4th Year) students OF special eneomology		
	Course title:	Insect transmission of plant diseases	Course Code: EN4111
Date:	January 2021	Total assessment: 100 marks	Time allowed:2h

Note: The exam in two pages

Answer the following questions:

1. Choose from between the brackets the correct answer (15 marks, each 1 marks)

a. Blossom blight of red clover is transmitted by (tree cricket - honey bees - ants).

b. Ergot of cereals and grasses is (fungal - bacterial - viral) disease.

c. Flower spot of azalea is caused by (*Ovulina azalea-Botrytis anthophila- leptomans* sp.).

d. Heart rot of coconut palm is (nematodal - protzoal - fungal) disease.

e. Endosepsis of figs is caused by (*Fusarium moniliforme - Pseudomonas savostoni -caponidium citri*).

f. The color of spores of Rust diseases is (white - green- orange).

g. Souring of fig disease is transmitted by (beetles - drosophila - both).

h. Fig smuts and mold disease is transmitted by (aphid - thrips - beetles).

i. Brown rot of stone and pome fruit disease is transmitted through (pollination - feeding - oviposition).

j. The spores of grape mold have (gray - green - orange) color.

k. Rot of cotton is specific to (boll - stem - leaves).

l. corn seed rot is transmitted during (feeding - pollination - oviposition).

m. Pine wilt is (nematodal - fungal - viral) plant disease transmitted by (thirps - red palm weevil - ground beetles).

n. Perennial canker of apple is (nematodal – fungal - viral) disease, caused by (*Gloeosporium perennans - Ceratocystis*).

o. Power mildews is (fungal – protozoal - viral) disease.

2. Write short note on each of the following plant diseases (25 marks, each 6 marks)

a) Sooty mold
b) Wood-stain disease
c) Phloem necrosis of coffee
d) Potato leafroll
e) Bean pod mottle

3 Compare in details between nonpersistent, semipersistent, and persistent virus? (10marks)

4. Write briefly on the following points. (25 marks, 5 marks each)

a) Importance of insect in transmission of plant diseases.
b) Insect transmission of xylem-inhabiting bacteria.
c) Role of insects in plant bacterial diseases.
d) Symptoms of plants disease caused by bacteria.
e) Apple proliferation disease.

5 Complete the following sentences: (10 marks)

a) Plant diseases caused by mollicutes appear as ..... and .....

b) Diseases transmitted by insects interfere with the plant physiological functions like ....., and .....

c) Insects can transmit pathogens by 3 ways: 1. ....., 2. ....., 3. .....

d) Mollicutes are distinguished by ..... and they are limited to the ..... of their plant hosts, and they are transmitted by .....

6: Choose the correct answers: (15 marks, 1 mark each)

1) Soft rots disease can be transmitted by .....
a) beetles b) ants c) seed corn maggot d) leafhoppers

2) The toothed Flea beetle can carry ..... causing wilt of corn.
a) Erwinia carotovora b) *Erwinia tracheiphila* c) *Erwinia amylovora* d) *Pantoea stewartia*

3) Bacteria causing cucurbit yellow vine disease enter ..... of plant by bugs.
a) root b) shoot c) phloem d) xylem

4) Fire blight is a bacterial disease that can affect .....
a) corn b) cucumber c) apple d) pepper

5) Squash bug, *Anasa* tristis, is the vector of ..... disease.
a) pierce of grab b) wilt of cucurbits c) citrus greening d) yellow vine

6) Pierce's disease of grape is a ..... disease.
a) viral b) fungal c) mollicute d) bacterial

7) One of the characteristic symptoms of olive knot disease is .....
a) rots of plant organs b) wilt of plants c) yellowing of leaves d) galls formation

8) ..... is one of the most bacterial diseases of sweet orange and grapefruit.
a) Citrus greening b) Corn stunt c) Aster yellow d) Citrus stubborn

9) Pierce disease of grape is transmitted by .....
a) olive flies b) aphids c) leafhoppers d) ants

10) The following plant diseases are caused by mollicutes EXCEPT .....
a) apple proliferation b) aster yellows c) tomato big buds d) soft rots

11) ..... contributes spreading of citrus greening disease.
a) Flies b) Beetles c) Psyllids d) Squash bugs

12) Leafhoppers can transmit ..... causing aster yellows disease.
a) bacteria b) viruses c) fungi d) mollicutes

13) Tomato big bud disease can be transmitted by .....
a) Sharpshooter leafhoppers b) *Psylla* sp. c) brown leafhopper d) aster leafhopper

14) leafhopper, *Dalbulus maidis*, is the vector of ..... disease.
a) tomato big buds b) corn stunt c) pear decline d) citrus stubborn

15) Citrus stubborn disease transmitted by *Circulifer tenellus* affects .....plant.
a) tomato b) apple c) pear d) orange

Examiners: Prof Dr. Yasser D Dar and Dr. Hanaa El-Brens

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF CHEMISTRY AND ENTOMOLOGY			
	COURSE TITLE:	Insect physiology		COURSE CODE: EN 4141
DATE 20	MARCH, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

Answer the following questions:

1- Explain types of neurons. **(12 Marks)**

2-Write short notes on: **(18 marks)**

a. Muscle contraction.
b. Differences between synchronous and asynchronous skeletal muscles.
c. Glial cells.

3.Write short note on each of the following **(Total 70 Marks):**

a. The diagram of blood circulation in insect.
b. Humoral immune responses.
c. Hemoglobin protein.
d. Respiratory exchange mechanism between the tracheoles and the tissues.
e. Storage excretion at insect.
f. Respiration of Endoparasitic insects.
g. Discuss the factors affecting on enzymes activity.
h. Mention the digestion and absorption of Disaccharides sugars.
i. Juvenile hormone and it is role in insect development.
j. Wound healing of insect.

EXAMINERS	PROF. DR. HALA ABDEL-AZEEM	DR. MOHAMED SHAHEN

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	Examination for 4th level students of special ENTOMOLOGY			
1909	COURSE TITLE:	Insect Molecular Genetics		COURSE CODE: EN4107
DATE:	MARCH, 2021	TERM: 1ST SEMESTER	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

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Answer the following questions

First Question: (50 marks)

Q1-a: Write on the following briefly with drawings when necessary (20 marks):

1. Explain why the carbon atom C3' carries a hydroxyl group in the ribose sugar of a nucleic acid but caries only H atom in the deoxyribose sugar?
2. Why does Thymine carry CH3 but Uracil doesn't?
3. Base excision DNA damage repair.
4. Write what you know about molecular basis of epigenetics.

Q1-b: Define the following briefly (10 marks):

a) Rut sites **b)** snRNPs **c)** Polysomes **d)** 6,4-pyrimidine photoproducts
e) Code, codon, anticodon.

Question 2: MCQ (20 marks)

1- Dimers between two adjacent bases could result from:
a) Chemicals b) Radiation c) UV light d) Enzymes

2- Endoucleases are involved in:
a) Oxidation b) Hydrolysis c) Methylation d) Alkalyation

3- The bond between a phosphate group and the ribose sugar group in RNA is called:
a) Phosphoester bond b) Peptide bond c) Phospho-unhydride bond e) Phosphodiester bond

4- What provides the energy that drives the addition of nucleotides to a growing DNA chain during replication?
a) The release of a pyrophosphate b) The hydrolysis of ATP
c) The hydrolysis of a pyrophosphate d) The hydrolysis of GTP

5- Deoxy(N)triphosphates are:
a) Enzymes b) Amino acids c) Nucleotides d) Chemical bonds

6- Phosphorylation for primary proteins for activation or de-activation is:
a) Post-transcriptional modification b) Post-replicational modification
c) Post-translational modification d) Post- DNA repair modification

7- Which of the following protein(s) are found at the DNA replication fork?
a) sliding clamp b) tRNA c) telomerase d) A+B+C

8- The process by which DNA transfers its information to RNA is called:
A) transmutation B) transmittal C) translation D) transcription

9- Inside the cell, protein post translational modification occurs in:
a) The biochemical reaction's site b) Ribosomes c) Golgi app. d) Cytoplasm

10- An enzyme with more than one polypeptide chain, each of it encoding one different:
a) Gene b) Codon c) tRNA d) None is correct

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Question 3: **(50 marks)**

Q3-A.: Mention 4 different functions of restriction enzymes? **(10 marks)**

Q3-B.: Mention the enzymes that could be used in genetic engineering, and mention the main function of each one? **(10 marks)**

Question 4: Choose the correct answer of the following: **(30 marks)**

1- A large collection of clones representing many or all of an organism gene is referred to as a:
A-gene library B-gene house C-gene train D-gene book

2- Single stranded pieces of DNA left on both margins of a restriction fragment of DNA that has been cut with a restriction enzyme are called:
A- Vectors B-blunt ends C-waste fragments D- sticky ends

3- Commonly used vectors in genetic engineering applications include:
A- Plasmids B-viruses C-glass needles D-all of above

4- The bacterium *Bacillus thuringiensis* is sprayed on crops because it produced a crystal-like protein which damages the digestive system of:
A-deer B- larvae of certain insects C- farm animals D-rodents

5- The use of genes for correcting genetic disorders is called:
A-vaccination B-gene therapy C-genetic fixation D-all of the above

6- Plasmid are used as a vector because:
A- they are naturally transferred between bacteria.
B- they are small allowing them to be separated from chromosomal DNA.
C- Many contain genes for antibiotic resistance allowing researcher to identify cells with plasmids
D- All are correct

7- The transfer of DNA into cells is called:
A-recombination B-transformation C-ligation D-gene replacement

8- DNA from two different organisms which has been cut up and re-combined so that the resulting strand contain DNA from both organism is referred to as:
A- Coposit DNA B- Duplicated DNA C- recombinant DNA D- All of the above

9- Molecules that seek out and identify a particular molecules or piece of DNA are referred to as:
A-hunters B-seeker C-probes D-communicators

10- DNA from two different organisms which has been cut up and re-combined so that the resulting strand contain DNA from both organism is referred to as
A-recombinant DNA B- Duplicated DNA C- Coposit DNA D- All of the above

12-Viruses are:
A- DNA or RNA surrounded by protein coat
B- Responsible for causing diseases such as common flu and AIDS.
C- Used as vector in genetic engineering exprements.
D- All of the above

13-the cell wall of plant cell can be chemically broken down, known as .....
A-enzyme B-protoplast C-plantosphere D-All of the above

14- Transgenic organisms:
A-are becoming less and less common B-are both male and female
C-have genes from two different organisms D-all of the above

15- When circular plasmid DNA is cut open at a single site by a restriction enzyme, the resulting piece is:
A- a mixture of variously sized fragments B-many linear strands
C- a linear strand D- a mixture of equally sized fragments

Examiners	Prof. Elsayed I Salim. Dr. Osama Sweef

Good luck

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF ENTOMOLOGY			
	COURSE TITLE:	Insect Seminar		COURSE CODE: EN 4113
DATE 8	MARCH, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

Answer the following questions:

1. Choose from between the brackets the correct answer (10 marks: 2 for each)

1. In the last decade, the bacilli-based mosquito larvicides popularly known as.
a) biological larvicides b) chemical larvicides

2. Many populations of mosquito vectors of diseases have developed resistance to.
a) synthetic organic insecticides b) biological agent

3. The IGRs interfere with the ..... of target organisms.
a) neurological b) hormonal mechanisms

4. To delay onset of resistance, Bti formulations must contain toxins that interact with ..... or that have different modes of action.
a) mono receptor site b) multiple receptor sites

5. fungi such as Coelomomyces is an ..... parasite with a complex lifecycle
a) obligatory b) facultative

2. Indicate whether the following statements are true or false (Total 10 Marks, 2 for each):

1. Unlike insecticides, bio-control agents are host specific, safer to the environment, find easy application in the field.
2. Surface active agents are ionic, degradable chemicals on application to mosquito breeding habitats.
3. Ecdysone agonists are hormonally active insect growth regulators that disrupt development of mosquito larvae.
4. Both Bs and Bti are spore forming bacteria.
5. A potential key strategy for delaying resistance to insecticidal proteins is to use one toxin that act at different targets within the insect.

3. complete the following sentences with the correct answers:) Total 30 marks; 3 for each);

1. The major advantages of bio larvicides are..... , ... , ... and .....
2. Vector control is an essential and effective means for controlling .....
3. Vector control strategies include ..... , ... and .....
4. IGRs result in various kinds of ..... , ... and .....
5. The parasporal inclusion body is composed of ..... varying in quantity and type depending on the strain.

4.Write short notes on each of the following (Total 35 Marks):

a. Hypochlorite compounds had a pronounced effect on larval metabolic pathways.
b. DENV symptoms.
c. Mentions the history of clinical trials were conducted to treat DENV.
d. Diagnostic procedures of DENV.
e. Based on your study, which drug is best to control the DENV and why?
f. Why until now not available permanent vaccine against DENV?

5. Identify the following terms (Total 15Marks):

a. Microarray
b. miRNAs
c. Mi–T–P network
d. PTEN
e. Acetycholinsterase

EXAMINERS	**PROF. DR. MOHAMED SOLIMAN**	**DR. MOHAMED SHAHEN**

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	FINAL EXAMINATION FOR SENIOUR STUDENTS ENTOMOLOGY-CHEMESTIRY		
	COURSE TITLE:	Apiculture	COURSE CODE: EN4155
DATE:	13-1-2021	TOTAL ASSESSMENT MARKS: 50 MARKS	TIME ALLOWED: 2 HOURS

Answer the following questions:

1-Choose the correct answer (14 marks each: 2 marks)

A- The carniolan bee related to (European –Oriental-African) races.
B- The Hypopharyngeal glands of nurse worker bee secrete (pheromones-Royal jelly-Digestive enzyme).
C- The age of queen is (16 days-3-5 years- 21 days).
D- Sac brood diseases is (Bacterial- Viral- Protozoan) diseases.
E- The causes of American foul brood disease is (*Aspregillus flavus- Bacillus larvae- Ascophora apis*).
F- *Acarapis woodi* is (tracheal- thoracic-Abdominal) mites.
G- Antibiotic Tetracycline control the (American foul brood-Paralysis-Mites) diseases.

2- write a short notes on the following:(12 marks each 6 marks)

A-Viral diseases of honey bee and its control.
B-Races of honey bee.

3- Discuss the following: (12 marks each 6 marks)

A-Division of labor and factors effecting of honey bee colony.

B-Supering and removing supers.

4- Mention the following(12 marks each 6 marks)

A- Fungal disease and its control of honey bee colony.
B- The important of Beekeeping.

"good luck"

Prof Dr: Elsaied Ahmed Mohamed Naiem

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	FINAL EXAMINATION FOR SENIOUR STUDENTS ENTOMOLOGY-CHEMESTIRY		
	COURSE TITLE:	Apiculture	COURSE CODE: EN4155
DATE:	13-1-2021	TOTAL ASSESSMENT MARKS: 50 MARKS	TIME ALLOWED: 2 HOURS

Answer the following questions:

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"good luck"

Prof Dr: Elsaied Ahmed Mohamed Naiem

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OFSPECIAL ZOOLOGY			
	COURSE TITLE:	EPIDEMIOLOGY AND CLINICAL PARASITOLOGY		COURSE CODE: ZO 4105
DATE:	1/3/ 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

الامتحان فى صفحتين

FIRST PART: EPIDEMIOLOGY..... (50 Marks)

I) Read the following health problem and answer the provided questions..... (20 Marks)

A village lives around a swamp (مستنقع)has a total population of 6000. Of them, 1500 individuals are fishermen(صيادين). On 20 February 2020, 250 cases of swamp fever (حمي المستنقعات) have been detected in the farm, 190 of them were fishermen and the rest of the cases were through the non-fishermen people. At middle of June, 400 another cases of swamp fever were detected, 300 cases were fishermen. By the end of the year, the total numbers of all people suffered from the disease reached 1000. Forty individuals were died from the illness (swamp fever), but the rest of infected persons can overcome it and cure.

If you know that the infectious agent of swamp fever (mosquito) inhabits the vegetation in the swamp and the disease only transmits by mosquito bites to the fishermen and not by communication in between.

Evaluate the load (burden) of scabies in the farm community by:

1. Three different morbidity rates. (12 Marks)
2. One mortality rate. (4 Marks)
3. Relative and attributable risks. (4 Marks)

II. Fill in the blanks. ..... (10 Marks)

1) ..... Disease caused by pathogen and spread by an infected person, animal, to another person.
2) ..... The occasional appearance of an infection in one or few members of a community
3) ..... The ability of the organisms to produce specific reaction after infection has occurred.
4) ..... An infected person that harbors an infectious agent without clinical signs and serves as a source of infection to others.
5) ..... When insects' legs carrying pathogenic organisms and contaminate human food or drink.
6) ..... It is an allergic state of the host following exposure to certain antigens of microorganisms.
7) ..... It is the capability of organisms to produce a specific disease more than once.
8) ..... Pathogen degree of sensitivity to antibiotics and drug therapy.
9) ..... Transfer of infectious agents by contaminated inanimate objects or substances.
10) ..... The rate of development /probability of risk of disease in a population over period of time

III. Choose the correct answer ..... (10 Marks)

1- The epidemiologic triad of disease causation refers to:

a. Agent, host, environment **b.** Time, place, person **c.** Source, mode of transmission, susceptible host

2-Which of the following is a good measure of the killing power of the microbiologic agent?

a. Cause-specific death rate **b.** Age-specific death rate **c.** Case fatality rate **d.** Proportionate mortality rate

3-Which term best describes the pattern of occurrence of the three diseases noted below?

a. Endemic Disease 1: usually 40–50 cases per week; last week, 48 cases
b. Outbreak Disease 2: fewer than 10 cases per year; last week, 1 case
c. Pandemic Disease 3: usually no more than 2–4 cases per week; last week, 13 cases
d. Sporadic

4- In a classroom of 25 students (15 males and 16 females), 5 males develop hepatitis A over a 2-week period. During the next 6 weeks, an additional 3 males and 2 females develop the infection. The secondary attack rate is:

a. 30% **b.** 35% **c.** 40% **d.** 25%

5-Prevalence depends on incidence rate and duration of disease, where:

a. If incidence is high but duration is short - prevalence is relatively high
b. If incidence is low but duration is long - prevalence is relatively high
c. If incidence is constant and duration is short - prevalence is relatively high

6-The ability of the organisms to produce pathological reaction is measured by:

a.Age specific attack rate **b.** Age specific mortality rate

c. Second attack rat **d.** Ratio of clinical to sub-clinical cases.

7-Infant mortality rate could be measured by:

a. Total number of maternal deaths X 10(n) / Total number of births

b. Total deaths under one year of age during a given time interval X10(n) / Total live births during same time interval.

c. Number of new cases in a population during the period X10 (n) / Population at risk at the beginning of the period

8-Crude death rates are characterized by all EXCEPT.....

a. Are used in comparing mortalities **b.** Summary rates

c. Reflect population structure **d.** Affected by specific mortality rates

9-Rate of development of disease in the general population is measured by.....

a.prevalence rate **b.** second attack rate **c.** secondary attack rate **d.** incidence rate

10- Etiologic agents that cause disease can be detected by using the:

a.Incidence rate **b.** Case-fatality rate **c.** Attack rate **d.** Recovery rate

IV-Compare between..... (10 Marks)

1- Crude death rate and appritionate mortality ration. 2- Attack rate and secondary attack rate

SECOND PART: CLINICAL PARASITOLOGY..... (50 MARKS)

I. Illustrate a diagram explains the correlations of schistosomiasis clinical profiles with the in vivo progression of the parasite's lifecycle, host immune response, and respective pathological lesions. ..... (10 Marks)

II. Explain the structural changes of the red blood cells as clinical manifestations of malaria. Describe with illustrations whenever possible. ..... (10 Marks)

III. Regarding the diagnostic targets and the most important methods with their advantages and disadvantages, complete the following table..... (10 Marks)

Diagnostic target	Methods of choice	Pros and Cons
1) Microscopic detection of whole parasites in blood, feces, urine, or tissues (protozoa, helminth ova or larvae)		
2) Parasitic DNA or RNA		
3) Direct detection of parasite antigens in blood, stool, or urine		
4) Detection of antibodies in serum		

IV. Fill in the blanks with the proper terms..... (20 Marks, 1 Mark each blank)

1- The significances of studying clinical parasitology are **1)** ..... **2)** ..... **3)** .....

2- Flask shaped ulcers in the colon are caused by.....

3- The common clinical presentations of parasitic infections are **1)** ..... **2)** ..... **3)** ..... and **4)** .....

4- Amebic pericarditis caused by ..... and characterized by .....

5- Malarial hepatitis due to Plasmodium falciparum infection describes the occurrence of **1)** ..... **2)** ..... and **3)** .....

6- In Symptomatic congenital toxoplasmosis proliferation of tachyzoites leads to **1)** ..... **2)** ..... **3)** ..... **4)**.....

7- The chronic phase of fascioliasis begins when.....

8- The movable and painless subcutaneous nodules found in head, limbs, neck, abdomen and back are signs of .....

9- Sudden rupture of hydatid cysts releases large amounts of fluid causing .....

Best Wishes

EXAMINERS	PROF. IBRAHIM M. BAKR	PROF. NAHLA A. RADWAN

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY		
	FINAL EXAMINATION FOR SENIOUR STUDENTS SPEIAL ENTOMOLOGY		
	COURSE TITLE:	Apiculture	COURSE CODE: EN4115
DATE:	9-1-2021	TOTAL MARKS: 100 MARKS	TIME ALLOWED: 2 HOURS

1-Choose the correct answer (20 marks each: 2.5 marks)

A- The carniolan bee related to (European –Oriental-African) races.
B- The Hypopharyngeal glands of nurse worker bee secrete (pheromones-Royal jelly-Digestive enzyme).
C- The age of queen is (16 days-3-5 years- 21 days).
D- Sac brood diseases is (Bacterial- Viral- Protozoan) diseases.
E- The causes of American foul brood disease is (*Aspregillus flavus- Bacillus larvae- Ascophora apis*).
F- *Acarapis woodi* is (tracheal- thoracic-Abdominal) mites.
G- Antibiotic Tetracycline control the (American foul brood-Paralysis-Mites) diseases.
H- Unfertilized egg laid by queen grew to(drone-worker- queen or worker according to feeding).

2- write a short notes on the following:(30 marks each 10 marks)

A-Bacterial diseases of honey bee and its control.

B-Biology of honey bee colony. C:Requeening and wintering

3- Discuss the following: (20 marks each 10 marks)

A-Division of labor and factors effecting of honey bee colony.

B-Swarming and its control in honey bee colony.

4- Mention the following:(30 marks each 10 marks)

A- Mites and protozoan disease and its control of honey colony.

B-The important of Beekeeping. C: Races of honey bee

"good luck"

Prof Dr: Elsaied Ahmed Mohamed Naiem

	TANTA UNIVERSITY FACULTY OF SCIENCE ZOOLOGY DEPARTMENT			
	Exam for senior Students of Chemistry &Entomology program			
	Course title:	Ecology of freshwater insects الإمتحان في صفحتين		Course code: EN 4149
Date: March 2021		Term: first	Degree: 100 marks	The time allowed: 2 hours

Answer the following questions:

Part I (50 marks)

1. **Choose the correct answer from between the brackets (Total 14 Marks, each 2):**

A. The (littoral – limnetic – profundal) zone is open water where photosynthesis can occur.

B. (Lakes – Oceans) have several zones such as intertidal, pelagic, abyssal, and benthic.

C. Ice in winter blocks the (respiration – photosynthesis – movement) in ponds and animals may die (winterkill).

D. The benthic zones of (swamps – marshes – bogs) are rich in nutrients and contain plants, numerous types of decomposers, and scavengers.

E. Lentic ecosystem means (standing water – running water – wetland).

F. Marshes are (shallow – open – deep) wetlands along rivers.

G. (Planktons - Nektons - benthos) are free-swimming organisms.

Fill in the blanks with the appropriate words (Total 14 Marks, each 2)

A. The chemical analysis gives.....information on water quality.

B. Estuaries are sometimes called.....habitats for many juvenile organisms, especially for fishes.

C. The profundal zone is chiefly inhabited by.....

D. Five species of the genus..... .....live on the surface of tropical oceans.

E. .....providing spawning grounds and habitats for commercially important fish and shellfish.

F. ..... is the top predator of swamps.

G. Near ..... waters, mosses anchor themselves to rocks.

2. **Indicate if the statements are true or false with correction (Total 14 Marks, each 2):**

A. A bar-built estuary occurs when the rising seas invaded low-lying coastal river valleys.

B. Drainage the manufacture wastes in rivers have killed river organisms and made river fish inedible.

C. Detritus is the organic material that provides food for organisms at the base of the estuary's food web.

D. Mangrove swamps are coastal wetlands that occur in bays and estuaries across tropical and subtropical regions.

E. The snail beetle is found around the tide mark of many European shores.

F. The intertidal rove beetle builds burrows in the sand on the river shore.

G. Stressful conditions and abundant nutrients result in low species diversity, but a great abundance of the species present.

3. **Discuss the river characteristics referring to life and danger in rivers. (8 marks)**

Part II (50 marks)

4. **Choose the correct answers (20 marks, 2 each)**

   A. Many aquatic insects construct tubes or cases which provide varying levels of (drift - predator defense - adaptations - camouflage).

   B. The alternative strategies used by fish and invertebrate predators provide (suitable - specialized – limited - contrasting selective) environments for insect prey.

   C. In lakes with fish, *Enallagma* caudal lamellae are smaller and associated with a cryptic strategy for (swimming - predator avoidance - predator attacks - breeding).

   D. (Water ecosystem – soil - specialized habitats - permanent habitats) tend to have the highest diversity of insect species.

   E. Predatory fishes are not very effective in (dense - absent – Permanent - smaller) macrophyte beds.

   F. Within the Trichoptera, Rhyacophilidae is (free roaming - opportunistic facultative – immature) predators.

   G. Many of the sedentary, net-spinning Hydropsychidae are (free roaming- opportunistic-facultative – immature) predators.

   H. Detritivory, the feeding on decaying organic matter, is a major insect-mediated process in (lentic and lotic- all-specialized-terrestrial) systems.

   I. Diptera and Coleoptera are perhaps the best represented to (saline- specialized-terrestrial-subterranean)habitats.

   J. (predation- Filter feeding- self feeding) is the most common mechanism for acquiring food in specialized habitats.

5. **Answer the following questions: (30 marks, 5 marks each)**

   A. Why are fish indirectly affecting the diversity and relative abundance of smaller taxa?
   B. What is the case construction in insects?
   C. Eutrophication is not healthy for all ecosystems. Discuss.
   D. What are the most likely mechanisms that have prevented high insect diversity in marine habitats?
   E. What is the importance of insect drift?
   F. What are the causes of anthropogenic eutrophication?

Best wishes

EXAMINERS	Prof. Dr. Ensaf Elgayar Dr. Wesam Meshrif

	TANTA UNIVERSITYFACULTY OF SCIENCEDEPARTMENT OF ZOOLOGY EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF SPECIAL [illegible]TOMOLOGY			
	COURSE TITLE:	Insect hormones		COURSE CODE:EN 4103
DATE	JANUARY, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2 HOURS

(الامتحان في ورقتان)

1. Complete the following statements: (48 marks, 3 eachblank)

1- ..... ,..... and .....are the three major groups of insect hormones.
2- ..... in insects is responsible for regulating metamorphosis.
3- Biosynthesis and release of.....takes place in the prothoracic glands.
4- Two forms of .....hormone are found in insects, while.....hormone has 6 forms.
5- .....hormone synthesis starts from cholesterol which taken from.....
6- ..... hormones are a family of acyclic sesquiterpenoids primarily limited to insects.
7- JH 0 and 4-methyl-JH I seem to be exclusive to.....
8- .....hormone is responsible for cast determination in social insects
9- Mevalonate pathway starts from..... to synthesize..... which converted finally to.....hormone.
10-Insects belong to order Orthoptera use lipophorins and hexameric proteins in..... and.....
11-Metabolic inactivation of..... Occurred by specific esterases in the hemolymph.
12-.....cannot pass through cell membrane therefore they often bind to G protein coupled receptors.
13-Allatostatins have two functions: inhibit the synthesis of..... and reduce.....
14-.....hormone is a short peptide responsible for lipid mobilization.
15-Bursicon is responsible for.....and.....wh....

2.Fill in the blanks with the appropriate words: 45 Marks, 3 each)

a-The ..... and ..... systems are closely linked and are strongly dependent on the developmental and physiological processes of the insect life.
b- The neurosecretory cells found in ..... and .....
c- Prothoracic glands are also called ....., or ..... Theysynthesize.....
d- Where the PGs are missing, ... or ... are the sources of theecdysteroids.
e. .....fuses with ..... and ..... and form together Weismann's ring.
f.The.... are a pair of spherical bodies lying one on each side of theOesophagus, behind.....
g.....its cellular structure called Inka cells.
h.Inka cells produce ....., and involves .....,which lead to shedding of the old cuticle.
i.The highest number of neurosecretory cells occurs in .....
j. brain-retrocerebral neuroendocrine complexdemonstrates a close interaction between....., ..., ..., and .....
k. The protocerebrum includes ....., ... and .....
l.The secretions of the neurosecretory cells in the pars intercerebralis promote the functioningof..... stimulate ....., ..., and.....
m. Allatostatin: A peptide that ..... JH production byCA.....while Allatotropin: A peptide that .....JH production by CA.
n. The corpora cardiaca split into ....., and .....
o. Diuretic hormone (DH) is involved in ..... and .....

3. Write short notes on the morphology of the neurosecretory cells. (7marks)

4.Choose the correct answer: **(50marks)**

1. Insects with.....will undergo this period of arrested development at the predetermined point in their life cycle, regardless of the environmental conditions.
   (Reproductive diapause-Obligatory diapause-Facultativediapause)
2. Insects with .....undergo a period of suspended development only occurs due to environmental conditions.
   (Reproductive diapause-Obligatory diapause-Facultativediapause)
3. Insects undergo ..... which is a suspension of reproductive functions in adult insects.
   (Obligatory diapause-Facultativediapause-Reproductive diapause)
4. The best example of ..... is the monarch butterfly in North America.
   (Facultativediapause-Reproductive diapause-Obligatory diapause)
5. The.....occurs at a genetically predetermined stage of life, and occurs well in advance of the environmental stress.
   (Induction phase-Preparation phase-Maintenance phase)
6. This sensitive stage may occur within the lifetime of the diapausing individual, or in preceding generations, particularly in egg diapause.
   (Termination phase - Induction phase- Regulation of diapause)
7. During this phase, insects accumulate and store molecules such as lipids, proteins and carbihydrates. These molecules are used to maintain the insect throughout diapause and to provide fuel for development following diapause termination.
   (Preparationphase- Regulationofdiapause- Post-diapausequiescence)
8. The colors of many insects change to match the predominant color of the background. This phenomenon is called
   (Homochromy-Neurosecretory- Weaponry)
9. .....actively aggregate seeking conspecifics and at critical densities form marching bands of juveniles (hoppers) or vast winged swarms of adults.
   (Solitary phase locusts - Gregariousphase locusts- Adultsolitarylocusts)
10. .....avoid conspecifics except when seeking mates. They have cryptic or green color patterns and reduced wing morphologies and musculature.
    (Adultgregariouslocusts- Gregariousphase locusts- Solitary phase locusts)

Best wishes

EXAMINERS	**PROF. AFAF ELATRASH**
	DR. IMAN ELHUSSENY
	DR. SAMAR ELKHOLY

1969	Tanta University - Faculty of Science Department of Zoology		
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF CHEMISTRY AND ENTOMOLOGY		
	COURSE TITLE: INSECTICIDE TOXICOLOGY		Course code: EN 4143
DATE: 6, JANUARY 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

Q1. Choose the correct answer (Total 26 Marks, 2 for each):

1. Insect growth regulators are ..... risk insecticides to non-target organisms.
A) High B) Low C) Un affect

2. The only octopamine receptor agonist in current use is .....
A) Abamectin B) Spinosad C) Amitraz

3. The mimics of the juvenile hormones and ecdysone receptor agonists act on.....
A) CNS B) Endocrine system C) Peripheral nervous system

4. Acetylcholinesterase inhibitors bind to and inhibit the enzyme that normally responsible for.....
A) breaking down Ach B) breaking down Carbamate C) breaking down organophosphate

5. Phosphine gas and cyanide are considered to inhibit.....
A) Ion transport B) ATP synthesis C) Mitochondrial electron transport

6. The location on or within a particular protein where the toxicant binds and exerts its toxic action is known as the .....
A) Target site B) Mode of action C) Poison site

7. Avermectins activates .....
A) glutamate gated chloride channels B) Sodium ion channels C) ACH transmitter

8. one of advantage of using biopesticides is .....
A) High toxic B) Less persistent C) Host specificity

9. In both insects and mammals, fipronil .....
A) Block chloride channel B) bind to the acetylcholine C) Activate sodium ion channel

10. Acetylcholine can ..... its target neurons.
A) Only inhibit B) Only excite C) Either excite or inhibit

11. Diamides bind and stimulate .....
A) Muscular calcium channels B) Sodium ion channel C) Chloride ion channe

12. Of the three proteins involved in action potential conduction, only ..... is a target of insecticides.
A) The sodium channel B) The potassium channel C) The chloride channel

13. The major modulatore neurotransmitter in insects is .....
A) GAPA B) Octopamine C) ACH

End of Page 1 ➤➤➤➤➤➤ See page 2

Q2. Indicate whether the following statements are true (T) or false (T) (Total 24 Marks, 2 for each):

1) Neuromuscular disruptors directly affect energy state.
2) Non-specific multi-site inhibitors interact with one or more specific target sites.
3) Respiratory poisons affect energy metabolism.
4) Neuromuscular disruptors and respiratory disruptors directly are usually slaw and narrow in spectrum of activity.
5) Carbamates and organophospates are inhibitors of acetylcholinesterase.
6) Paralysis by sodium channel blockers is known as tetanic paralysis.
7) Gamma amino butyric acid can excite its target neurons.
8) The insect growth regulators do not target the nervous system.
9) Carbamates affect the chloride channel by inhibiting the g-aminobutyric acid receptor.
10) When indoxacarb enters the insect, it is broken down into a new molecule with no insecticidal properties.
11) Organochlorine insecticides prevent the mitochondria within cells from doing their job.
12) Insecticides are essential tools for preventing or minimizing insect damage.

Q3. Define the following terms: **(Total 20 points, 2 for each)**

1.	Toxicity.	**2.**	Pesticide treadmill.	**3.**	Latency time.
4.	Dose threshold.	**5.**	Lethal dose (LD50).	**6.**	Effective dose (ED50).
7.	NOAEL.	**8.**	Antagonism effect.		
9.	Hazard.	**10.**	Safety factor.		

Q4. Give short notes on each of the following **(Total 30 points, 3 for each)**

1.	Joint action of chemicals (pesticides).	**2.**	The role of APC.
3.	Target site resistance.	**4.**	Insecticides resistance mechanisms.
5.	The dose-effect relationship.	**6.**	Integrated control strategies.
7.	Duration of exposure.	**8.**	Behavioral resistance.
9.	Pesticides registration and safety in Egypt.		
10.	The factors effecting on the speed of resistance development.		

With Best Wishes

EXAMINERS	**Prof. Dr. Mohammed Soliman**	**Prof. Dr. Somaia Zaki**

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF CHEMISTRY AND ENTOMOLOGY			
1969	COURSE TITLE:	Biological control of weeds using insects		COURSE CODE EN4246
DATE:	2020	TERM	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2HOURS

Answer the following questions: (20 marks)

1- Fill in the blanks with appropriate words : (16 marks)

a. Aquatic weeds are..... .....

b. Alligator weed flea beetle was imported from..... consumes .....of the weed.

c. Larvae of .....mine inside stem cause plant to wilt and die.

d. The hydrilla tuber weevil failed to establish because .....

e. The mottled water hyacinth weevil and the chevroned water hyacinth weevil are effective in controlling the aquatic weed. They ....., ..., ..., ...but unable to control plants growing in wastewater.

f. Both nymphs and adults of the water hyacinth .....feed on.....and cause leaves to turn brown.

g. Adults and larvae of..... feed on leaves, crown, newly emerging shoots of water lettuce weeds.

h. ..... was introduced as a biological control agent for giant salvinia in the U.S.

2- Write short notes on the problems that caused by aquatic weeds in water bodies (4marks)

3- define the following terms (10 marks, each 2 marks)

a- Invasive weed

b- Perennial weeds

c- Induced dormancy

d- Dicotyledon weeds

e- Forced seed dormancy

4-

a- **write in details on the characters of weeds enable them to disperse? (10 marks)**

b- **Compare between winter and summer annuals? (5 marks)**

c- **Why weeds represent a problem? (5 marks)**

Examiners	Prof. Dr. Iman el Husseiny	Dr. Hanaa Elbrense

	Tanta University Faculty of Science Department of Zoology Entomology Branch			
	Exam for Senior Students of Chemistry / Entomology			
	Course title:	Biological control of Insects (الأسئلة في صفحتين)		Course code: EN4242
Date: January	January , 2021	Term: First	Total assessment marks: 100	Time allowed: 2 hours

Answer the following questions:

1. **Choose from between the brackets the correct answer (18 Marks, 2 each):**
   a. *Encarsia formosa* is an important bio-control parasitoid of (aphid – thrips - whitefly).
   b. The classical biological control is the introduction of (exotic – native) natural enemies to a new location of the pest and release.
   c. Conservation deals with (resident – exotic – laboratory reared) natural enemy populations.
   d. *Bacillus thuringiensis israelensis* destroy the gut epithelium of (Culex – Aedes).
   e. Salinity is the (abiotic – biotic) factor that impairs the epizootiology of aquatic fungi.
   f. *Coelomoyces* spp. can only be produced *in (vitro – vivo).*
   g. Crossover may happen when the biological control agent may feed on a (desired – undesired) insect.
   h. The (toxin – cells – spores) from *B. thuringiensis* can be incorporated directly into plants through the use of genetic engineering.
   i. (Fungal – Viral – Nematode) biopesticides have to be ingested to kill their target pests.

2. **Fill in the blanks with the appropriate words (14 Marks, 2 each blank)**
   a. ..... is an insecticidal chemical extracted from seeds of *Azadirachta indica.*
   b. inoculative releases are often used as a substitute for .....that might be undesirable because of unwanted side effects.
   c. The economic injury level (EIL) is often expressed the level .....the control measures should be applied.
   d. Inoculative releases are often used as a substitute for .....that might be undesirable because of unwanted side effects.
   e. ..... are less effective against internal feeders.
   f. The Chinese wrote about ..... disease of silk worm 2000 years ago.
   g. ..... can be grown on egg-yolk media or sun flower oil and yeast extract.

3. **Indicate whether the following statements are true or false (12 Marks, 2 each):**
   a. Inundation involves releasing large numbers of natural enemies for the immediate reduction of a damaging or near-damaging pest population.
   b. Pyrethrins are fast-acting insecticidal compounds.
   c. To have stabilized product of the fungi, wetter, stickers and humectants are added.
   d. Infestation reduction is to keep the population of a potential pest from reaching economic level.
   e. Pathogenicity implies that the pathogen enters the body of the host, and be able to reproduce or develop infective units.
   f. Augmentation is less sustainable because it relies on regular releases of purchased products.

4. **What are the important questions raised before considering an augmentation program? (16 marks).**

5. **Choose from between the brackets the correct answer (Total 10 Marks, 2 Mark each):**
   a. (Convergent lady beetle - the multicolored Asian lady beetle - the twelve-spotted or pink lady beetle) complete development feeding on eggs, larvae of many other lady beetles.
   b. Vedalia beetle is (monophagous - oligophagous) predator of the cottony cushion scale, *Icerya purchasi.*
   c. Monophagous predators are (somewhat restricted in their host range limited to a few species - highly restricted in their host range sometimes limited to one prey species).
   d. Lacewing larvae prefer (insect eggs – caterpillars - aphids) as prey.
   e. Tachinid flies are exclusively (parasitoids – predators).

6. **Indicate whether the following statements are true or false (Total 10 Marks, 2 each):**
   a. Since predators feed on more prey species, large number of predators is required for biological control.
   b. Nabidae, damsel bugs are generalist predators.
   c. Predators are usually very host specific
   d. Both adults and larvae of the Syrphidae, hover flies are spredaceous on aphids.
   e. All predators are predaceous in both immature and adult stages.

7. **Classify parasitoids according to host stage used. (5 Marks)**

8. **What are the advantages of the use of predators and parasitoids to control insect pests? (4 Marks)**

9. **Write short notes on the biological control agent of the greenhouse whitefly. (5 Marks)**

10. **Define each of the following (Total 6 Marks, 2 Mark each)**
    a. Gregarious parasites. b. Superparasitism. c. Multiparasitism.

GOOD LUCK

Examiners: Prof. Dr. Amal Seif & Dr. Wesam Meshrif