	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY EXAMINATION FOR JUNIORS (FORTH YEAR) STUDENTS OF BIOLOGY			
	COURSE TITLE:	Insect Societies		COURSE CODE:EN 4252
DATE /6	JUNE 2015	TERM: SECOND	TOTAL ASSESSMENT MARK:50	TIME ALLOWED: 2HOURS

(الامتحان فى صفحتين)

Answer the following questions

1-Complete the following statements (15 Marks, 1 mark each):

1. Ant species that produces a new generation each year called.....
2. Gamergate colonies are.....
3. In ants, fertilized eggs give rise to....., while unfertilized eggs give rise to.....
4. Trophallaxis is a process in which.....
5. Honeypot ants are characterized by.....
6. Workers cannot ..... , however, ant workers of a number of species can lay ..... eggs that become fully .....
7. Workers of many species have their egg-laying structures modified into .....
8. Ants are found on all continents except.....
9. Ants are able to exploit a wide range of food resources as.....,.....,...
10. The main casts of ant colonies are.....
11. Ants can survive floods by.....
12. *Ployharchis* species of ants lack .....but their submerged colony can breathe by.....
13. Ant-loving caterpillars of the family Lycaenidae produce....when ants.....
14. Ants classified as pests include.....,.....,.....,.....
15. Ant trials back to the nest can be used to control ants by.....

2-Choose the correct answer (5 marks, 1 mark each):

1. Ants develop by..... metamorphosis.
   (incomplete – complete – gradual)
2. Some ant species have food storage workers, which called.....
   (soldiers – replete – gamergates)
3. An aggregation pheromone produced by.....

(Nasanov's gland – hypodermal gland – cornicles)

4. .....a process in which workers, soldiers, and nymphs migrate to a new nesting site, and this fragment of the original colony develops supplementary reproductives.
   (sociotomy – budding – founder effect)
5. Members of family termididae are.....feeding on humus.
   (humivores – carnivores – herbivores)

3-Discuss the following items (25 marks, 2.5 marks):

1. The main differences between subsocial and parasocial species
2. The main characters of eusocial species.
3. The main castes of ant colonies.
4. Disadvantages of sociality
5. Ant morphology
6. Nuptial flight of ants
7. The unique character of *Mycocepurus smithii* species.
8. Main types of pheromones secreted by ants and their use.
9. Navigation in ants
10. Medical importance of ants.

4-Give evidence that ants could learn and modify the duties of their workers (5 marks).

GOOD LUCK

Examiners:

Dr. Mervat Rafik
Dr. Samar El Kholy

TANTA UNIVERSITY, FACULTY OF SCIENCE, BOTANY DEPARTMENT			
Final Examination for level 4 Students (Chem/Microbiology)			
Course title:	Microbial Plant Interaction		Course Code: MB4204
DATE:15, JUNE, 2015	TERM: SECONDS	TOTAL ASSESSMENT MARKS: 100	Time Allowed: 2 hours

Answer the following questions.

QI-A-Describe the following pathogens and write on the interaction between the pathogen and host cells. (40mark)

1- *Taphrina deformans*. 2-*Pythium sp.*

B-Write on the types of infections in smut diseases and describe the loose smut Disease of wheat (blossome infection).

Q2-Write on **3** of the following: (40mark)

1-Bacterial wilt disease of tomato caused by *Pseudomonas solanacearum*

2-Disease cycle of crown gall by *Agrobacterium tumefaciens* .

3-Three types of root infection caused by nematodes.

4-Symptoms and mechanism of honey dew formation in Ergot disease.

Q3-Complete the following : (20mark)

1-Etiology.....

2-Inoculation....., Penetration.....and overwintering.....

3-Infection of the plant by the disease depends on...,...,....

4-Pathogen genotype.....and pathogen phenotype.....

5-Symptoms caused by potato leaf roll virus....,....,....and the disease is controlled by.....,....,....

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6-In.rust disease, monoecious pathogen is….and heteroecious pathogen……

7-Bacterial soft rot disease caused by….. and symptoms on the host plant….,….,….

8-Types of spores in smut diseases….and……

Good luck. **Prof. Dr. Omyma Ahmed.**

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANYY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) CHEM./MICROBIOLOGY STUDENTS			
1969	COURSE TITLE:	Genetic Engineering		COURSE CODE: BO4248
DATE:	03 JUNE, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

ANSWER THE FOLLOWING QUESTIONS

1. Match each of the terms in the left column to the best fitting phrase from the right column (10 Marks)

a. oligonucleotide	**1**. a DNA molecule used for transporting, replicating, and purifying a DNA fragment.
b. vector	**2**. a collection of the DNA fragments of a given species, inserted into a vector.
c. sticky ends	**3**. DNA copied from RNA by reverse transcriptase.
d. recombinant DNA	**4**. stable binding of single-stranded DNA molecules to each other.
e. *E. coli*	**5**. organisms created by introducing foreign DNA into the germline.
f. genomic library	**6**. allows for blue/white selection.
g. *Lac Z* gene	**7**. contains genetic material from two different organisms.
h. cDNA	**8**. an ideal host cell easy to handle and propagate.
i. transgenics	**9**. short single-stranded sequences found at the ends of many restriction fragments.
j. hybridization	**10**. a short DNA fragment that can be synthesized by a machine.

2. Complete the following statements (10 Marks)

a. Genetic selection and screening methods rely on ..... or ..... of certain traits.
b. Restriction enzymes are called ..... and are of three ..... .
c. Bacteriophages are literally ..... .
d. The genetic information in bacteria is expressed *via* ..... .
e. ..... was isolated in 1967 and can join two strands of DNA together, this why it is regarded as ..... .
f. The basis of genetic manipulation is the ability to ..... from ..... .

3. Compare between the following (12 Marks)

a. pBR322 and pUC18 plasmids.
b. Biolistic DNA delivery and microinjection.
c. *In vivo and ex vivo* routes for gene therapy.

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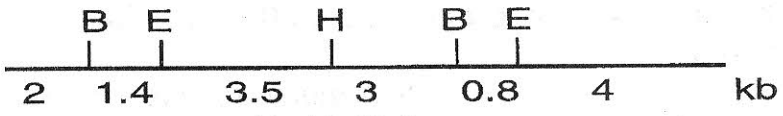
4. **Write short notes on the following (8 Marks)**
   a. Insertional inactivation.
   b. Deletion analysis in the study of gene expression.

5. **Imagine you have cloned a 14.7 kb piece of DNA, which contains restriction sites as shown here. (10 Marks)**



B = *Bam*HI site, E = *Eco*RI site, H = *Hin*dIII site

Numbers under the segments represent the sizes of the regions in kilobases (kb). You have labeled the left end of the molecule with ^{32}P.

   a. What radioactive bands would you expect to see following electrophoresis if you did a complete digestion with *Bam*HI? *Eco*RI? *Hin*dIII?

   b. Draw a restriction map of all fragments if you did a complete digestion with *Bam*HI? *Eco*RI? *Hin*dIII?

Good luck

EXAMINERS	DR. REDA GAAFAR	

1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	FINAL EXAMINATION FOR SENIORS STUDENTS OF DUAL SPECIALIZATION PROGRAM CHEMISTRY/MICROBIOLOGY, CHEMISTRY/BOTANY AND CHEMISTRY/GEOLOGY			
	COURSE TITLE:	SUPRAMOECULAR CHEMISTRY		COURSE CODE: CH4218
DATE:	JUNE 10, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

Question (I): **(20 marks)**

A. Choose the correct answers for the following missing parts: **(5 marks)**

1) Clathrate hydrates are cages of hydrogen bonded water molecules trapped _____ inside.
   a) gases b) hydrocarbons c) a and b d) none of them

2) In host-guest complex of [Al (EDTA)]$^-$, the ligand tends to form an _____ geometry around the metal ion.
   a) planner b) octahedral c) spherical d) tetrahedral

3) Crown ethers are able to bind ammonium ions via _____ within their cavities.
   a) cation-π interaction b) hydrogen bonding c) ion-dipole interaction d) π -π interaction

4) In high-dilution technique, _____ quantities of reactants with equi molar concentrations are mixed together at a controlled rate in a _____ volume of solvent.
   a) large b) equal c) small d) low

5) Zwitterionic guests containing aromatic rings are usually bind to the ditopic hosts via _____ and the complex is further stabilized by _____ between the aromatic ring systems.
   a) ion-dipole interaction b) hydrogen bonding c) hydrophobic effect d) π -π interaction

B. Discuss in details each of the following: **(15 marks)**

1- The catalytic oxidation mechanism of dimethyl hydroquinone using $KMNO_4$ as an oxidant in the presence of [18]crown-6.
2- The exo-template synthesis of azo-macrocyclic hosts. Explain how Ni^{+2} ions can be removed from its inert complex with macrocyclic ligand and the major disadvantages of employing this template effect.
3- Clathrate hydrate. (Illustrate your answer with structures)

Continue to the other parts of the exam

Question (II): **(15 marks)**

A. Differentiate between each pair of the following: **(10 marks)**

(Illustrate you answer with examples)

1- Crown ethers and Lariate ethers for NH_4^+ complexation. (Illustrate your answer with structures, binding constants and define the type of supramolecular interaction)

2- Cascade and ditopic hosts.

3- Proton sponge and hydride sponge.

B. Complete the missing parts of the following statements: **(5 marks)**

1- The complex system with a bidentate ligand is more stable than that of using unidentate ligands due to _____ and _____.

2- Podand is a _____ species with two or more sets of guest-binding functional groups, while macrocycle is a _____ usually with nine or more atoms in the ring.

3- Katapinands are _____ that are able to bind _____.

4- Cryptand hosts display a peak selectivity for binding metal ions in which cryptand with four oxygen atoms is selective for _____ cation, while the cryptand that contains six oxygen atoms is selective for _____ cation.

5- Thiourea channels are slightly _____ than that of urea clathrates due to _____.

Question (III): Give full account on the following: **(15 marks)**

1- Cyclodextrins Hosts based neutral-molecule binding.

2- The anion host design principles and how to overcome the non-directional nature of electrostatic interactions.

3- The ion-transportation mechanism of K^+ into the biological cell using Valinomycin carrier. (Illustrate your answer with figures showing the nature of cell membrane)

Best Wishes

Examiners

Prof. Dr. Dina M. Abd El-Aziz	Dr. Nagy Labieb Kamal

1969	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY			
	Final Examination for Seniors students (Fourth Year Botany and Chem./ Micro.)			
	COURSE TITLE:	**Physiology of fungi**		COURSE CODE: MB4206
DATE:6	June: 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

1- Complete the following:- **(20 mark)**

a- Most fungi are---------, they grow at moderate temperatures in the range ------- °C , with optima from 20-30°C.
b- logarithmic phase, which is marked by cell division----------
c- The shape of the fungal cell is the shape of its -------
d- The cell wall serves a number of important roles in fungi like---------
e- Zymogenic form of enzyme is called---------
f- Fungal physiology is a branch of -------which deals--------
g- The functions of vesicles in apical growth are ----------.
h- Mixures of amino acids are generally reported to be --------to any individual amino acids source used by fungi.
i- The two types of water within fungal cell are------.
j- Systemic Fungicides are ----------.

2- **Discuss briefly <u>three only</u> from the following:** **(30 mark)**

a- A method which can be used for testing systemic fungicides.
b- Dimorphism.
c- Site of action of inhibitor.
d- Chitin synthesis of fungal cell wall.

3- Discuss briefly the three theories describing the action of sulfur on fungi. **(20 mark)**

<u>Please see next paper</u>

4- Choose one answer:- **(30 mark)**

a- Psychrophilic fungi can grow over the range 20-50°C (maximum 58°C) with optima above 40°C.
True **False**

b- Mutation : The change that would occur in the genetic materials as a result of exposure to extreme condition.
True **False**

c- Turbidimetric method considers way to culturing fungi
True **False**

d- There are only two degree of requirements for fungal growth, Minimum requirements and Maximum requirements
True **False**

e- Lyophilization is preservation of fungi by drying under vacum from the frozen state by sublimation of ice.
True **False**

f- The chemical composition of the wall differs greatly between taxonomic groups of fungi.
True **False**

g- Autolysis this means, the cells of organism is dying due to the toxic compounds that appear in the media.
True **False**

h- In stationary phase the number of fungal cells is in maximum.
True **False**

i- polysaccharides appear to play a decisive role in wilt diseases of vascular plants.
True **False**

j- A pronounced fall in pH of ammonium nitrate medium during the growth of fungi is common.
True **False**

With our best wishes

Prof. Dr. Alaa Mostafa Abou-Zeid- Prof. Dr. Mahmoud Abo-El-Yazed-

Dr. Jehan Esmail

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF ZOOLOGY			
	EXAMINATION FOR 4TH YEAR STUDENTS OF CHEMISTRY AND ENTOMOLOGY			
	COURSE TITLE:	Biological control		COURSE CODE: EN 4242
DATE:13-6-2015	JUNE 2015	TERM: SECOND	TOTAL MARKS:100	TIME ALLOWED: 2 HOURS

Answer the following questions:

1. Choose from between the brackets the correct answer (Total 22 Marks):
   1. The predatory larvae of (convergent lady beetle, *Hippodamia convergen* - the twelve-spotted or pink lady beetle, *Coleomegilla maculata* - the multicolored Asian lady beetle, *Harmonia axyridis*) are unique among lady beetles in their ability to complete development on an exclusive diet of pollen.
   2. Oligophagous predators have (highly specialized - semi-restricted - broad) prey range.
   3. *(Coleomegilla maculate*, the twelve-spotted or pink lady beetle - *Harmonia axyridis*, the multicolored Asian lady beetle - the convergent lady beetle, *Hippodamia convergens*) can complete development feeding on the eggs and larvae of many other lady beetles, a fact that has spoiled its reputation as an otherwise effective biological control agent in many types of agricultural production.
   4. The parasitoid of the green house white fly (*Encarsia - Aphelinus)* is supplied in the form of black scales on pieces of leaf or pasted onto cards.
   5. In super-parasitism, (a single host is attacked by more than one species of parasites - several females of one species of parasite attack the same host).
   6. The larvae of the gall midge, *Aphidoletes* are (predators - parasitoids) of aphids.
   7. The classical biological control is the introduction of (exotic –native) natural enemies to a new location of the pest and released.
   8. Manifestation of a disease in natural insect populations is defined as (Epizootiology – Infection – Infestation).
   9. (Fungal – Viral – Bacterial) biopesticides don't have to be ingested to inhibit or kill their target pests, physical contact is sufficient.
   10. The (toxin – cells – spores) from *B. thuringiensis* can be incorporated directly into plants through the use of genetic engineering.
   11. An excellent example of an augmentative practice that has been successfully adapted to a wide variety of agricultural system is the inundative release of (*Trichogramma - Encarsia Formosa)* wasps.

2. Correct the underlined words in the following statements (Total 8 Marks)
   1. Parasites are usually not host specific, many are limited to one or a few closely related host species, most have low reproductive rates.
   2. *Trichogramma* are known to parasitize larvae of several insect orders, whereas other genera are apparently restricted to a single host order.
   3. Tachinidae is exclusively composed of predators and playing an important role in natural biological control of many agricultural pests.

3. Fill in the blanks with the appropriate words (Total 24 Marks)
   1. Parasitoids are usually defined by.....
   2. The categories of natural enemies of insect pests are.....
   3. .....are the preferred food of the convergent lady beetle, *Hippodamia convergens.*

4. The most common features of insect predators are.....
5. Ichneumonidae parasitize mainly..... .....
6. Phytoseiid mites are especially important because they are predators of.....
7. *Culex pipiens* is susceptible to *Bacillus thuringiensis israelensis*, whereas *Aedes rusticus* is .....
8. Most Entomopathogenic .....can be easily produced *in vitro* systems by liquid batch fermentation.
9. ..... are less effective against internal feeders.
10. .....can be grown on egg-yolk media or sun flower oil and yeast extract.
11. ..... oil is an insecticidal chemical extracted from seeds of *Azadirachta indica.*
12. ..... deals with laboratory reared natural enemies.

4. Indicate whether the following statements are true or false (Total 24 Marks):
   1. Parasitoid insects are insects whose immature stages and adults develop by feeding on or in the bodies of their host insects and ultimately kill the host.
   2. In multiparasitism, a single host is attacked by more than one species of parasites, and the second parasite species feeds on the original host, not the other parasite species.
   3. Hyperparasitoids are parasites that are parasitic to other parasites.
   4. Some Eulophid wasps are hyperparasitoids
   5. Aphelinidae cause serious limitations on the natural and applied biological control with the use of aphid parasitoids.
   6. Habitat diversification describes the creation of habitat to enhance survival and reproduction of beneficial organisms
   7. Augmentation is less sustainable because it relies on regular or periodic releases of purchased products.
   8. Inundation involves releasing large numbers of natural enemies for immediate reduction of a damaging or near-damaging pest population.
   9. Viruses have relatively slow action compared to that of chemical insecticides.
   10. Entomopathogenic nematodes can be kept for up to 3 years under refrigeration without loss of infectivity.
   11. Pyrethrins are fast-acting insecticidal compounds.
   12. The cottony cushion scale, *Icerya purchase* is one successful example of biological control of insects.

5. What is the difference between natural control and biological control? (2 Mark)

6. Write Short note on the importance of the following insect taxa as biological control agents (Total 8 Marks):
   1. Syrphidae, the hover flies.
   2. *Chrysopidae*, the green lacewing.
   3. Trichorammatidae.
   4. Anthocoridae, pirate bugs.

7. Discuss the following items (total 12 marks):
   1. Biotic and abiotic factor affecting fungal epizootics.
   2. Conservation and enhancement.
   3. Purchase and release of natural enemies.

GOOD LUCK

Prof. Dr. Amal Seif & Dr. Wesam Meshrif