



Entomology Department
Final Exam. 2nd Semester, 2019
Time allowed 1 Hour

Insect pathology and Immunology (396E)
Date Wednesday, 15/5/2019

Answer the following questions:

1. Put the sign \checkmark or X (27 Marks)

Statement	
Insect viruses can be cultured in suitable artificial media.	X
The members of (GVs) can be distinguished from (NPVs) morphologically.	\checkmark
Protozoa release highly virulent bacteria (<i>Xenorhabdus</i> spp.) into the haemocoel.	X
Chemically poisoned insects can have the appearance of pathogen-infected insects.	\checkmark
Extreme cold and heat, solar radiation and drought, can harm insects, often cause decline of insect populations.	\checkmark
Regeneration of lost appendages usually takes place during molting.	\checkmark
Bacteria in digestive tracts of healthy insects resembles the flora of higher animals.	\checkmark
The most important bacteria causing insect diseases are the non-spore formers.	X
Most synthetic insecticides are neurotoxins.	\checkmark
The clottable proteins are lipophorin and vitellogenin like proteins.	\checkmark
Mitogens can activate the humoral and cellular defense mechanisms in insects.	\checkmark
Entomophthorales fungi are easily cultured on artificial media.	X
Dead insects due to <i>Steinernema</i> nematodes turn red.	X
<i>Bacillus popilliae</i> do not form crystalline parasporal body.	X
Bacterial endotoxins reproduce inside the gut of insects and cause septicemia.	X
Nematodes can be considered as parasites and predators of insects.	\checkmark
<i>Bacillus cereus</i> is a Saprophytic non-spore forming bacteria.	\checkmark
Baculoviruses kill hosts more slowly than Entomopox viruses.	X
Plant secondary compounds can poison insect hosts.	\checkmark
Insects with deformed body parts, supernumerary appendages or winglessness, are suffering from genetic diseases.	\checkmark
The fat body, and the hemocytes originate from the mesoderm.	\checkmark
Parasites may cause mechanical injuries in insects.	\checkmark
Facultative bacteria can grow and divide only inside the insect host.	X
<i>Cordyceps</i> Fungi belong to Ascomycetes.	\checkmark
<i>Nosema</i> is a highly pathogenic insect nematode.	X
<i>Romanormis culicivora</i> attack locusts and grasshoppers.	X
The rapid synthesis of antimicrobial peptides is a cellular reaction to infection.	X

2. Write the scientific term in front of each of the following statements (18 Marks)

Statement	Scientific term
Important pigment in encapsulation of insect's parasites	Melanin
Pro-enzyme, responsible for The formation of melanin in insects.	Phenoloxidase
Protect the virus and can persist for years in the right conditions	Occlusion bodies
The safest insect viruses	Bucloviruses
Paired pericardial lobules with an important role in insect's immunity.	Lymph nodes
Microbes that harm their hosts	Pathogens
Abnormal masses of tissues, uncoordinated with that of normal tissue and persists in the same excessive manner after cessation of the stimulus that affects it.	Neoplasms
Speeds the heart rate, mobilizes hemocytes, and stimulates RNA synthesis in injured insects.	Haemokinin (injury factor)
A multicellular defense mechanism where an overlapping layer of hemocytes is formed around larvae of parasitic insects.	Encapsulation
Produced mainly in the fat body to defend insects against microbial attack.	Antimicrobial peptides
Pathogens that kill insects by asphyxiation or starvation or by toxins.	Fungi
Unsegmented, worm-like organisms with a tough outer cuticle.	Nematodes

3. In the field and with your naked eyes, how can you differentiate between insects killed by bacterial, Fungal or viral pathogens? (3 Marks)

Bacterial infection	Viral infection	Fungal infection
<ul style="list-style-type: none"> Larvae remain normal color. After death darken to brownish-black. Often flaccid. Do not liquefy. 	<ul style="list-style-type: none"> Larvae become pale and flaccid. Dark in color after death. Larvae may hang by their prolegs. May ooze white fluid. Infected larvae are sometimes smaller than healthy larvae. 	<ul style="list-style-type: none"> After death the cadaver is desiccated, never flaccid. In soft-bodied insects the body is covered with fungal mycelium In hard bodied insects, bands of hyphae grow between the integuments