UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

FINAL EXAMINATION PAPER – MAY 2010

TITLE OF PAPER	:	RODENTS AND VERMIN CONTROL
COURSE CODE	:	EHS 215
TIME	:	2 HOURS
MARKS	:	100

INSTRUCTIONS	:	ANSWER QUESTION 1 AND FOUR OTHERS.
	:	QUESTION 1 IS COMPULSORY
	:	EACH QUESTION IS 20 MARKS
	:	NO FORM OF PAPER SHOULD BE BROUGHT INTO NOR TAKEN OUT OF THE EXAMINATION ROOM
	:	BEGIN THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER
	:	ALL CALCULATIONS/WORKOUT DETAILS SHOULD BE SUBMITTED WITH YOUR ANSWER SHEET

Answer **QUESTION 1** and **ANY FOUR** others.

QUESTION 1 MULTIPLE CHOICE : indicate your response by writing the letter corresponding to your chosen answer among those given for each item.

i. Which one of the following is NOT true about the contents of waterdispersible (wettable) powder formulations of insecticides? Wettable powders consist of
   A. Insecticide
   B. a synergist
   C. Inert carrier
   D. Suitable wetting agents
   E. Suspending agents

ii. Which of the following is/are true about mites?
   A. Adults and nymphs have four pairs of legs
   B. Larvae have four pairs of legs
   C. Adults and nymphs have 3 pairs of legs
   D. All species larviposit
   E. All species are ovoviviparous

iii. Which of the following ticks is/are soft ticks?
   A. Boophilus anulatus
   B. Otobius megnini
   C. Ornithodoros moubata
   D. Rhipicephalus bursa
   E. Both B and C

iv. Which one of the following Dipteran flies does not cause furuncularmyiasis?
   A. Cochliomyia hominivorax
   B. Cordilobia anthropophagi
   C. Dermatobia hominis
   D. Hypoderma spp
   E. Both A and c

v. Which one of the following does not determine the amount of swelling and inflammation that occurs following bee, wasps, or hornet stings?
   A. Location of stings
   B. Number of stings
   C. Degree of sensitivity of host
   D. Size of stinging apparatus
   E. Rapidity of absorption of venom

vi. The degree of toxicity resulting from snakebite depends on
   A. potency of venom
   B. size of person bitten
   C. amount of venom injected
   D. the condition of the snake
   E. All of the above

vii. Which one of the following is not an emergency measure for a victim of the female black widow spider bite?
   A. Applying a cold pack on the bite for several hours
   B. Immobilising patient and bitten area
   C. Administration of antiserum
   D. Establishing airways and respiratory passages
   E. Washing bite wound with lots of water

viii. The insecticide dieldrin is a(n)
   A. pyrithroid
   B. organophosphate
   C. chlorinated hydrocarbon
   D. Both A and C
   E. None of the above

ix. Which of the following is true about the norway rat?
   A. It sheds spindle shaped droppings
   B. It is small and slender
   C. It has large ears covered with short hairs
   D. It has a blunt snout
   E. It has a black fur

x. Which one of the factors below does not influence the application and efficiency of an insecticide?
   A. Size and shape of insecticide particles
   B. Concentration of insecticide in formulation
   C. Types of surfaces to be treated
   D. Type of water used for mixing
   E. None of the above

Question 2

Mites belonging to the Suborder Mesostigmata contain the Family Dermanyssidae which consist *Dermanyssus gallinae*.

a. Write down *three* common names for *Dermanyssus gallinae*. (3)
b. Mention and explain three methods by which mites could be sampled for the purpose of determination of the degree of infestation. (6)
c. With respect to rickettsial pox, name the mite vector, the pathogen and the reservoir host responsible for maintenance of transmission in houses. (3)
d. Discuss mite infestation control in:
   i. fowl houses (5)
   ii. among grassland travellers (3)

[20 marks]

Question 3

a. Define:
   i. primary myiasis (2)
   ii. secondary myiasis (2)
   iii. accidental myiasis (2)
b. Name two materials on which Dipteran larvae that cause myiasis in man feed (2)
c. i. Explain how dermal or nasopharyngeal myiasis occurs. (3)
   Ii. Explain how larvae of flies causing dermal myiasis may be effectively removed from the skin of man and the infestation treated. (2)
d. *Dermatobia hominis* is a common parasite of humans that cause furuncular myiasis.
   i. Explain how infestation with *Dermatobia hominis* occurs in man. (2)
   ii. Describe briefly the pathogenesis that results following infestation with *Dermatobia hominis*. (3)
   iii. Explain how treatment of *Dermatobia hominis* infestation may be achieved. (2)

[20 marks]

Question 4

The life cycle of ticks differ in several important features.

a. With respect to the life cycle of ticks, define:
   i. one-host tick (2)
   ii. two-host tick (2)
   iii. three-host tick (2)
b. Explain how you may differentiate *Ixodes pilosus* from *Dermacentor andersoni* by using features in the following parts:
   i. scutum (2)
   ii. festoons (2)
   iii. spiracles (2)
   iv. palps (2)
c. Discuss one method commonly used to control tick infestation among subsistence cattle farmers on Swazi Nation Land. Explain the effectiveness of the method and any problems it has. (6)

[20 marks]

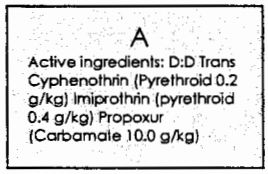
Question 5

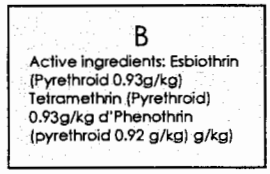
a. i. Mention FOUR reasons why the control or prevention of rodent infestation in ships is important. (4)
   ii. Mention FOUR ways rodents may be prevented from entering a ship during docking. (4)
b. What evidence would you use to confirm rodent infestation in a house? (4)
c. Mention two advantages and two disadvantages of using traps to control rodents in a house. (4)
d. Discuss two natural ways rodents may be prevented from entering human dwellings. (4)

[20 marks]

Question 6

a. Can A and Can B are two labels on cans of commercial insecticide spray (Dyroach).





i. Which of the two cans would you recommend for effective control of cockroaches at a domestic setting? Give reasons for your choice. (3)
ii. If the can you have chosen in (i) is bought and used repeatedly for a year, what is most likely to happen during the control of cockroaches in the homestead? Give reasons for your answer. (3)
iii. Describe the formulation of the insecticide in the cans as well as the mechanism by which the insecticide is released. (3)

b. Malathion is a mildly toxic compound often used in control of housefly infestations.
   i. Describe briefly the appearance of malathion. (3)
   ii. Mention three ways malathion is used to control houseflies. (3)

c. DDT is an insecticide that has been used to effectively control mosquito populations in Swaziland, South Africa and Mozambique.
   i. Mention 3 ways DDT may be taken into the body of man and animals. (3)
   ii. Explain the method of functioning of DDT that results in such a remarkably efficient control of mosquitoes. (2)

[20 marks]

Question 7

a. Mention FOUR signs that may suggest an individual has been bitten by a snake. (4)

b. i. Mention three important measures you would undertake or observe before a victim of snakebite is taken to a health facility for proper treatment. (3)
   ii. If symptoms develop rapidly following snakebite and antiserum cannot be given, what can be done on a snakebite victim to delay development of adverse effects of venom? (2)
   iii. Is incision through fang marks to further reduce the amount of venom advisable as an emergency measure? Give reason(s) for your answer. (3)

c. Discuss FOUR measures or precautions that may prevent individuals in snake-infested areas getting snakebites. (8)

[20 marks]