

UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

SUPPLEMENTARY EXAMINATION PAPER – JULY 2005

TITLE OF PAPER : VECTOR AND VERMIN CONTROL

COURSE CODE : EHS 203

TIME : 3 HOURS

MARKS : 100

INSTRUCTIONS :

- : ANSWER FIVE QUESTIONS IN ALL.
- : ANSWER QUESTION 1 AND ANY FOUR OTHER OF YOUR CHOICE
- : NO FORM OF ANY PAPER SHOULD BE BROUGHT INTO NOR 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
- : CALCULATORS MAY BE USED BUT THEY MUST BE THE SILENT TYPE

DO NOT OPEN THIS EXAMINATION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR

QUESTION 1 - COMPULSORY

a. MULTIPLE CHOICE

i. The spray nozzle will produce a swath ----- cm wide if kept at a distance of 45 cm from the wall. (2)

- A. 10 cm
- B. 75 cm
- C. 100 cm
- D. 45 cm
- E. 25 cm

ii. Surplus insecticide solution after spraying is completed can be discharged of safely by pouring it : (2)

- A. into a water drain
- B. in the river
- C. onto the ground
- D. into a pit latrine
- E. None of the above

iii. Which one of these is not a measure for tick control ? (2)

- A. Vegetation management
- B. Host management
- C. Cultural practices
- D. Targeted Chemical control
- E. None of the above

b. Examine carefully the statements below and write **T** (True) or **F** (False) for each as you see fit.

- i. Girls tend to have heavier infestations of head lice than boys.
- ii. Transmission of rhodesience sleeping sickness occurs most frequently along rivers and lakes.
- iii. *Bacillus thuringiensis* serotype H-14 (B.t. H – 14) produces toxins which are very effective in killing mosquito and blackfly larvae after ingestion.
- iv. The scabies mite is easily visualized with the naked eye.
- v. Cockroaches, like houseflies, are usually the most important cause of a disease and do not only play a supplementary role.

(5)

c. Match the following vectors with the disease they transmit by writing the corresponding letter next to the number e.g. 2 . f

- | | |
|-------------------------------------|----------------------|
| 1. Blackfly | a. malaria |
| 2. <i>Tabanus latipes</i> | b. filariasis |
| 3. Fleas | c. Onchocerciasis |
| 4. Mosquito | d. kala-azar |
| 5. <i>Ixodes</i> ticks | e. sleeping sickness |
| 6. <i>Triatomine</i> bugs | f. babesiosis |
| 7. Sandfly | g. anthrax |
| 8. <i>Pediculus humanus humanus</i> | h. scrub typhus |
| 9. Tsetsefly | i. Plague |
| | j. Chaga's disease |
| | k. Trench fever |
| | l. Lyme disease |

(9)

[20 marks]

QUESTION 2

a. Cockroaches are among the most common pests in many homes and other buildings.

- i. Explain why the cockroach problem is the same in high altitudes as in low altitudes. (2)
- ii. What is the egg case of a cockroach called ? (1)
- iii. What two environmental features determine the length of time before cockroach eggs hatch ? (2)
- iv. Explain why cockroaches are important pests whose spread have to be controlled in every homestead. (4)
- v. Explain how baits and traps function in the control of cockroaches. (3)

b. The common housefly, *Musca domestica*, lives in close association with people all over the world and feeds on human foodstuffs and wastes.

- i. Explain why the housefly is of public health importance. (4)
- ii. Explain what feature(s) you may use to identify the housefly from other flies (2)
- iii. Explain how fly breeding in garbage and in other organic refuse may be prevented by homesteads. (2)

[20 marks]

QUESTION 3

- a. Mosquitoes are important vectors of several tropical diseases and are more important as nuisance pests than vectors in countries with a temperate climate.
- i. What three things attract a mosquito to an animal or person to result in a bite ? (3)
 - ii. Describe the breeding habitat of Anopheline mosquitoes, giving two examples of such habitats. (4)
 - iii. Mention three ways people may protect themselves from bites of mosquitoes. (3)
 - iv. Discuss an experiment you may use to determine the effectiveness of a wall sprayed with DDT in killing mosquitoes in a house. (4)
- b. Onchocerciasis is an important disease causing blindness among the people residing in West Africa. WHO, UNDP, the World Bank, Donor Countries and the countries of West Africa have initiated the Onchocerciasis Control Programme (OCP) to reduce the burden.
- i. Explain why onchocerciasis is also called river blindness. (2)
 - ii. Discuss the strategies employed in the Onchocerciasis Control Programme in West Africa. (4)

[20 marks]

QUESTION 4

- a. Bedbugs, head lice and crab lice do not transmit any disease to humans.
- i. Explain why bedbugs, head lice and crab lice are of public health importance. (3)
 - ii. Mention two species of bedbugs that feed on humans. (2)
 - iii. What groups of people are commonly infested with bedbugs, head lice and crab lice ? (3)
 - iv. Explain how one may prevent infestation with head lice and with crab lice. (4)
 - v. Explain how you may prevent transmission of bedbugs from one house to another. (2)
- b. Fleas occasionally transmit diseases and parasites from animals to humans during bloodfeeding.
Mention two methods by which individuals may prevent themselves from flea bites. (2)
- c. Describe the methods you may use to prevent infestation of cats and dogs with fleas. (If insecticide use is suggested, at least one must be named). (4)

[20 marks]

QUESTION 5

- a. Numerous species of mites are parasitic on mammals and birds and occasionally attack humans.
- i. Mention two reasons mites are important public health pests. (2)
 - ii. Name the mite that cause scabies. (1)
 - iii. Discuss the pathogenesis and symptoms that are associated with scabies. (3)
 - iv. Explain how scabies infection may be confirmed. (2)
 - v. Mention one drug that may be used to treat scabies. (1)
 - vi. Mention two methods you may use to prevent and control the mite population in a house. (2)
- b. Ticks are arthropods that suck blood from animals and humans and are important vectors of a large number of diseases.
- i. Mention three differences between the class to which ticks belong, Arachnids and the Insecta class. (3)
 - ii. Define ornate and scutum as they apply to ticks. (2)
 - iii. Discuss tick control under the following headings :
 - Use of repellents (2)
 - Application of insecticides to animals (2)

[20 marks]

QUESTION 6

- a. Rats and mice have followed man to most of the areas he has settled. Man's indifference and carelessness in handling foodstuff and refuse have fostered populations of rats and mice in such proximity to his home and work that they are called "domestic" rodents.
- i. Explain how rodents may get access into human dwellings. (3)
 - ii. Discuss in detail how rodent control may be achieved through proper handling of foodstuff and refuse. (9)
- b. Discuss the factors that determine the efficacy of DDT wall-spraying in a mosquito control programme. (8)

[20 marks]

QUESTION 7

- a.
- i. Define myiasis (1)
 - ii. Explain how a complete treatment of dermal myiasis may be achieved on an individual. (2)
 - iii. Explain how the tumbu fly, *Cordilobia anthropophaga*, causes a furuncular type of myiasis in man. (2)
 - iv. Mention two ways by which infestations with tumbu fly may be prevented. (2)
- b. Snakes cause about 500 000 bites per year from which a good percentage result to death.
- i. Mention three factors that determine the degree of toxicity of a snake venom. (3)
 - ii. Also, mention three ways by which a snake may introduce its poison into the body of a victim. (3)
 - iii. Describe briefly the symptoms you are likely to observe in one who has been bitten by a poisonous snake. (3)
 - iv. Mention THREE measures you may give as advice to members of a community to undertake to reduce the chances of being bitten by snakes.(4)

[20 marks]