

UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

FINAL EXAMINATION PAPER – MAY 2005

- TITLE OF PAPER : INTRODUCTION TO PARASITOLOGY,
MICROBIOLOGY AND IMMUNOLOGY
- COURSE CODE : HSC 102
- TIME : 3 HOURS
- MARKS : 100
- INSTRUCTIONS : ANSWER **FIVE** QUESTIONS IN ALL.
- : AT LEAST TWO QUESTIONS MUST BE ANSWERED
FROM EACH SECTION (I.E. SECTION A OR B)
- : 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**

PART A : INTRODUCTION TO PARASITOLOGY

ANSWER AT LEAST TWO QUESTIONS FROM THIS SECTION

QUESTION 1

a. MULTIPLE CHOICE : Write the letter corresponding to your chosen answer among those provided for each question.

i. A louse is a (n)

- A. endoparasite
- B. intracellular parasite
- C. extracellular parasite
- D. ectoparasite
- E. facultative parasite

ii. A parasitic infection maintained at a more or less stable rate of prevalence within the human population of an area is a(n)

- A. epidemic infection
- B. endemic infection
- C. sporadic infection
- D. hyperendemic infection
- E. enzootic infection

iii. Which one of the following parasites moves by cilia ?

- A. *Entamoeba histolytica*
- B. *Plasmodium vivax*
- C. *Schistosoma mansoni*
- D. *Trypanosome rhodesiense*
- E. *Balantidium coli*

b. Both *Entamoeba histolytica* and *Balantidium coli* invade tissue and cause ulcers and dysentery in a human host. Explain how you may differentiate between the two diseases by using the nature of symptoms associated with each. (2)

c. Name the drugs you may use to treat :

- i. Amoebic dysentery (1)
- ii. Balantidial dysentery (1)

d. Use the rule of F to explain how amoebic dysentery may be transmitted to humans in a community. (4)

- e. What control measures may be utilized in a community to result in a reduction of both amoebic and balantidial prevalences. (6)

[20 marks]

QUESTION 2

- a. Match the parasites below the medium from which they are diagnosed. Some media may be chosen more than once.

| | |
|----------------------------|--------|
| 1. Trypanosomiasis | blood |
| 2. Schistosomiasis mansoni | urine |
| 3. malaria | faeces |
| 4. Onchocerciasis | sputum |
| 5. Ascariasis | skin |

(5)

- b. i. Explain why an egg count is done during the diagnosis of schistosomiasis. (2)
ii. Write briefly the pathogenesis associated with schistosomiasis haematobium. (3)
iii. What complication usually result in death of a patient of schistosomiasis mansoni ? (3)

- c. *Ascaris limbricoides* is one parasite that results in heavy infection in a large majority of members of a community.

- i. Explain why this disease often affects large numbers of children in a community. (3)
ii. Explain how these children may be protected from contacting ascariasis. (4)

[20 marks]

QUESTION 3

- a. Malaria remains one of the most significant causes of disease burden in Africa and each year causes over 4 million deaths and 300 – 500 million episodes of acute illness globally.

- i. Explain why malaria is more prevalent in the lowveld of Swaziland. (2)
ii. *Plasmodium falciparum* is the most deadly of the four species of malaria that cause disease in man. Give FOUR reasons why *P. falciparum* is more deadly than the other species of malaria. (4)
iii. A group of students have to go to Big Bend, an area that is highly prevalent of malaria for a good part of the year.
Explain what the students have to do before departure to prevent themselves from catching the disease even if they are bitten by mosquitoes.
Explain also, what they can do while in Big Bend to prevent mosquito bites. (6)

b. The diagnosis of trypanosomiasis involves the identification of trypomastigote in blood, lymph or tissue.

- i. Write down one causative agent of trypanosomiasis. (1)
- ii. Explain how you may differentiate between a trypomastigote and an epimastigote. (2)
- iii. Write down one drug you may use to treat a victim of trypanosomiasis. (1)
- iv. Write down the genus of the vector responsible for the transmission of trypanosomiasis. (1)
- v. Mention three advices you may give to members of a community on how they may prevent themselves from the bites of the vector mentioned in (iv) above. (3)

[20 marks]

QUESTION 4

a. MULTIPLE CHOICE : Write down the letter corresponding to your chosen response among those given for each question.

i. Which of the following microfilariae has a diurnal periodicity ? (2)

- A. *Wuchereria bancrofti*
- B. *Loa loa*
- C. *Mansonella perstans*
- D. *Onchocerca volvulus*
- E. *Brugia malayi*

ii. Which one of the following is not an appropriate container for the collection of a faecal sample from a patient ?

- A. a light plastic box
- B. an empty tin with a lid
- C. a polythene cup
- D. a waxed cardboard box
- E. a glass jar with a spoon attached to the stopper

iii. The best time to collect urine for the diagnosis of schistosomiasis is between :

- A. 11:00 am and 5:00 pm
- B. 6:00 am and 10:00 am
- C. 6:00 pm and 6:00 pm
- D. 2:00 pm and 5:00 pm
- E. 6:00 pm and 10:00 pm

- b. The eggs of *Taenia saginata* and those of *Taenia solium* are often indiffereniable. Explain how the following may be identified to make a specific diagnosis :
- i. scolex of *Taenia saginata* and that of *Taenia solium*. (2)
 - ii. Proglottid of *Taenia saginata* and that of *Taenia solium*. (2)
- c. During meat inspection, *Cysticercus cellulose* appear as opalescent nodules in connective tissue between muscle fibres.
- i. Mention two ways man is infected with *Cysticercus cellulosae*. (4)
 - ii. Mention two ways man may prevent infections with adult *Taenia solium*. (3)
- d. Write down the vectors responsible for the transmission of the following filarial parasites to man :
- i. *Brugia malayi* (1)
 - ii. *Onchocerca volvulus* (1)
 - iii. *Loa loa* (1)

[20 marks]