UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

SUPPLEMENTARY EXAMINATION PAPER – JULY 2010

TITLE OF PAPER	:	INTRODUCTION TO PARASITOLOGY
COURSE CODE	:	HSC 104
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. An unusual number of infections acquired simultaneously from the same source is known as a(n)
   A. sporadic infection
   B. epidemic
   C. hyperendemic infection
   D. endemic infection
   E. outbreak

ii. A host in which a parasite is merely transported from one area to another is called a(n)
   A. mechanical vector
   B. intermediate host
   C. paratenic host
   D. definitive host
   E. both A and C

iii. Entamoeba histolytica causes damage on the host through:
   A. mechanical (physical) methods
   B. toxic secretions
   C. allergic by-products of metabolic reactions
   D. enzymatic secretions
   E. competition for nutrients

iv. Which one of the following methods of water purification or disinfection is not effective in the prevention of Giardia lamblia infection?
   A. Sedimentation
   B. Filtration
   C. Chlorination
   D. Iodination
   E. Boiling

v. Which one of the following protozoan parasites have a sexual reproduction phase
   A. Toxoplasma gondii
   B. Trypanosoma gambiense
   C. Entamoeba histolytica
   D. Balantidium coli
   E. Trichomonas vaginalis

vi. The miracidum is a stage that hatches from the egg of
   A. Schistosomes only
   B. All flukes
   C. All tapeworms
   D. All flukes and tapeworms
   E. *Diphylobothrium latum*

vii. The egg shown below is from

A. *Ascaris lumbricoides*
B. *Trichuris trichiura*
C. *Hookworm*
D. *Enterobius vermicularis*
E. *Fasciolopsis buski*

viii. A patient complains of pneumonitis, chronic bronchitis, a wheezing cough, low grade fever and asthma-like conditions. Upon examination of his foot skin, a larva currens that is more broad than narrow is identified. What is the patient suffering?
A. *Strongyloides stercoralis*
B. *Necator americanus*
C. *Ancylostoma duodenale*
D. *Enterobius vermicularis*
E. *Trichuris trichiura*

ix. The incubation period of Plasmodium malariae is
A. 72 hours
B. 48 hours
C. 12 days
D. 13 – 17 days
E. None of the above

x. A recrudescence is associated with human infections of
A. Plasmodium falciparum and Plasmodium malariae
B. Plasmodium vivax and Plasmodium ovale
C. Plasmodium falciparum and Plasmodium ovale
D. Plasmodium vivax and Plasmodium malariae
E. Plasmodium ovale and Plasmodium malariae

QUESTION 2

A patient complains of profuse diarrhoea, epigastric pain and abdominal cramps. On closer examination, the patient looks pale. He claims to have taken part in an expeditional tour of some tropical African countries.

i. What parasitic infection do you think the patient may be suffering from? (1)
ii. How can you go about confirming your suspicion? (3)
iii. How do you think the patient could have acquired the infection? (4)
iv. Explain the pathogenesis that could have led to profuse diarrhoea, one of the symptoms enlisted by the patient. (4)
v. What treatment process would you recommend for the patient? (2)
vi. What advice would you give the patient to avoid future infection with the same parasite when taking part in expeditional tours. (3)
vii. What advice for control would you give to a community that suffers common epidemics of the parasitic infection? (3)

[20 marks]

QUESTION 3

Malaria remains one of the most significant causes of morbidity and mortality, causing about 2 million deaths annually.

a. What is the infective stage of the malaria parasite? (1)
b. Two major symptoms of malaria are severe anaemia and cerebral malaria. Explain how these symptoms come about. (5)
c. Another symptom of malaria involves the 'malarial attack'.
   i. What causes a 'malarial attack'? (2)
   ii. Describe what happens to a patient during a malarial attack'. (3)
d. Outline the steps you would follow in the preparation of a thin blood smear to be used to confirm the species of malaria infecting a patient. (5)
e. Name one combination drug currently recommended by the World Health Organisation for the treatment of malaria in chloroquine-resistant areas. (1)
f. Mention 3 methods you may use to protect yourself from mosquito bites if you were to visit Ngcayizivele Camp in Big Bend for a week. (3)

[20 marks]

QUESTION 4

a. Amoebiasis causes ulcers in the upper large intestines and in extra-intestinal organs such as the liver.

   i. Explain how *Entamoeba histolytica* causes intestinal ulcers in man. (3)
   ii. Explain how ulcers eventually appear in extra-intestinal organs like the liver and lungs. (3)
   iii. Explain how you can would confirm amoebic dysentery infection in the laboratory. (3)
   iv. *Entamoeba histolytica* trophozoites look very similar to those of *Entamoeba coli*, a non-pathogenic commensal of the caecum and lower large intestines. How can you differentiate the two parasites other than using the trophozoite stages? (2)
   v. What importance does the recovery of *Entamoeba coli* serve in stool even when *Entamoeba histolytica* is absent? (2)

b. *Trypanosomiasis rhodesiense* is transmitted through the bite of *Glossina morsitans.*

   i. Describe the breeding habitats of *Glossina morsitans*? (2)
   ii. Mention two groups of people that are most likely to be infected with *Trypanosoma rhodesiense*? (3)
   iii. What advice would you give to these people to prevent themselves from bites of the tsetse flies whenever they would be exposed. (2)

[20 marks]

QUESTION 5

Schistosomiasis causes illness in 200 million people worldwide yet remains one of the neglected diseases. In Swaziland, the most important species infecting children are *Schistosoma mansoni* and *Schistosoma haematobium*.

a. Describe the distribution of schistosomiasis in Swaziland. (2)
b. How do the symptoms of schistosomiasis mansoni differ from those of schistosomiasis haematobium? (4)
c. What diagnostic procedure would you recommend to confirm infection with the two flukes in (a) above. (3)
d. Name one drug that is effective for treatment of both blood flukes. (1)
e. Discuss schistosomiasis control under the following headings:
   i. Snail control (5)
   ii. Prevention of exposure to cercarial penetration (3)
   iii. Prevention of development of eggs in water (2)

[20 marks]

QUESTION 6

a. Name the following:
   i. the usual intermediate host of *Taenia saginata* (1)
   ii. the usual intermediate host of *Taenia solium* (1)
   iii. a first intermediate host of *Diphylobothrium latum* (1)
   iv. a second intermediate host of *Diphylobothrium latum* (1)

b. Name the:
   i. larval stage of *Taenia saginata* (1)
   ii. larval stage of *Taenia solium* (1)
   iii. the stage that hatches out of the egg of *Diphylobothrium latum* (1)
   iv. first stage larva of *Diphylobothrium latum* (1)
   v. second stage larva of *Diphylobothrium latum* (1)

c. Niclosamide is the best drug for the treatment of fish tapeworm infection but is not recommended for taeniasis solium. Explain why niclosamide is not recommended for taeniasis solium. (2)

d. Explain how infection with each of the following tapeworms may be acquired by man.
   i. *Taenia saginata* (2)
   ii. *Taenia solium*, and (2)
   iii. *Diphylobothrium latum* (2)

e. Mention one way by which individuals may prevent infection with each of the following:
   i. *Taenia saginata* (1)
   ii. *Taenia solium*, and (1)
   iii. *Diphylobothrium latum* (1)

[20 marks]

QUESTION 7

a. Name the vectors responsible for transmission of the following filarial nematodes:
   i. *Wuchereria banchrofti* (1)
   ii. *Loa loa* (1)
   iii. *Mansonella ozzardi* (2)
   iv. *Mansonella perstans* (1)
   v. *Mansonella streptocerca* (1)
   vi. *Onchocerca volvulus* (1)

b. Explain how diagnosis of the following filarial nematodes may be confirmed in the laboratory.
   i. *Wuchereria banchrofti* (2)
   ii. *Onchocerca volvulus* (2)
   iii. *Loa loa* (2)

c. Discuss the strategies used in the Onchocerciasis Control program (OCP) in West Africa, giving your view whether you thing each of the strategies could lead to achievement of set objectives. (7)

[20 marks]