CHUKA UNIVERSITY

SPECIAL/ SUPPLEMENTARY UNIVERSITY EXAMINATIONS

FIRST/ SECOND YEAR EXAMINATION FOR THE AWARD OF

BACHELOR OF SCIENCE (NURSING)

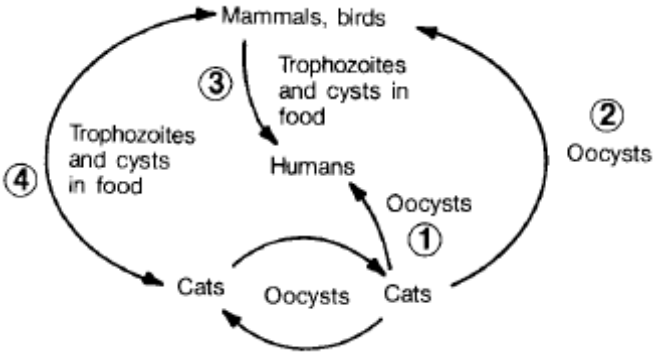
NURU 122/ NURU 178/ NURS 227: MEDICAL PARASITOLOGY

STREAMS: BSc Nursing (Y1T3/ Y2S2) **TIME: 2 HOURS**

INSTRUCTIONS
ANSWER ALL QUESTIONS

PART I: ANSWER ALL QUESTIONS (40 MARKS)

1. In order to exert control over the primary cause of toxoplasmosis of pregnancy, which one of the following steps of the life cycle of *Toxoplasma* would be most practical to interrupt?



a. Step 1

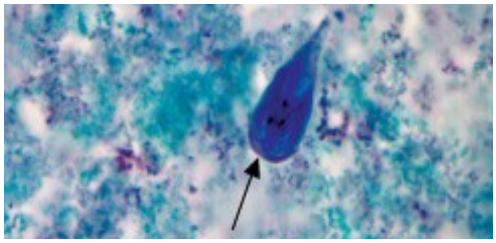
b. Step 2

c. Step 3

d. Step 4

2. The diagnostic characteristics of *Plasmodium falciparum* are best described by which one of the following statements?
    a. A period of 72 h is required for the development of the mature schizont, which resembles a rosette with only 8 to 10 oval merozoites
    b. An important diagnostic feature is the irregular appearance of the edges of the infected red blood cell
    c. The signet-ring–shaped trophozoite is irregular in shape with ameboid extensions of the cytoplasm
    d. Except in infections with very high parasitemia, only ring forms of early trophozoites and the gametocytes are seen in the peripheral blood

3. The life cycle of this parasite consists of two stages: the cyst and the trophozoite. The trophozoite is shown in the figure below. The most likely identification of this organism is



    a. *Entamoeba*
    b. *Giardia*
    c. *Trichomonas*
    d. *Trypanosome*
4. Human infection with the beef tapeworm, *Taenia saginata,* usually is less serious than infection with the pork tapeworm, *T. solium,* because
    a. Acute intestinal stoppage is less common in beef tapeworm infection
    b. Larval invasion does not occur in beef tapeworm infection
    c. Toxic by-products are not given off by the adult beef tapeworm
    d. The adult beef tapeworms are smaller
5. Analysis of a patient's stool reveals small structures resembling rice grains; microscopic examination shows these to be proglottids. The most likely organism in this patient's stool is
    a. *Ascaris lumbricoides*
    b. *Necator americanus*
    c. *T. saginata*
    d. *Trichuris trichiura*
6. A woman complains of having paroxysmal attacks of chills, fever, and sweating; these attacks last a day or two at a time and recur every 36 to 48 h. Examination of a stained blood specimen reveals ring-like and crescent-like forms within red blood cells. The infecting organism most likely is
    a. *Plasmodium falciparum*
    b. *Plasmodium vivax*

c. *Plasmodium malariea*
d. *Plasmodium vivax*

7. One of the most clinically significant infections in patients with AIDS is *Pneumocystis jiroveci* pneumonia (PJP). PJP is a treatable disease; therefore, rapid diagnosis is essential. The method of choice for detection of *P. jiroveci* in respiratory specimens is
   a. Methenamine-silver stain
   b. Toluidine blue stain
   c. Direct fluorescent antibody (DFA) microscopy
   d. Indirect fluorescent antibody (IFA) microscopy
8. A renal transplant patient was admitted for graft rejection and pneumonia. A routine evaluation of his stool showed rhabditiform larvae. Subsequent follow-up revealed similar worms in his sputum. He had no eosinophils in his peripheral circulation. The most likely organism is
   a. *Necator*
   b. *Hymenolepsis*
   c. *Ascaris*
   d. *Loa loa*
9. Amebae that are parasitic in humans are found in the oral cavity and the intestinal tract. Which one of the following statements best describes these intestinal amebae?
   a. They are usually nonpathogenic
   b. They can cause peritonitis and liver abscesses
   c. They are usually transmitted as trophozoites
   d. They occur most abundantly in the duodenum
10. Schistosomiasis is a disease characterized by granulomatous reactions to the ova or to products of the parasite at the place of oviposition. Clinical manifestations include which one of the following?
    a. Bladder wall hyperplasia
    b. Pulmonary embolism
    c. Splenomegaly
    d. Cardiac abnormalities
11. Which of the following organisms penetrates skin, is endemic in Africa and Latin America, and has a large lateral spine on its eggs?
    a. *Clonorchis*
    b. *S. mansoni*
    c. *Schistosoma japonicum*
    d. *Schistosoma haematobium*
12. *Ascaris* are best observed in human specimens by which one of the following?
    a. Sigmoidoscopy and aspiration of mucosal lesions
    b. Baermann technique
    c. Dilution followed by egg count
    d. Examination of a cellophane tape swab
13. A tissue-dwelling trematode that may be found in feces can also be detected in
    a. Vaginal secretions
    b. Duodenal contents
    c. Blood
    d. Biopsied muscle

14. A protozoan with characteristic jerky motility is most commonly observed in
    a. Vaginal secretions
    b. Duodenal contents
    c. Blood
    d. Biopsied muscle

For questions 15 to 18 indicate the organism associated with the stated stage responsible for causing human disease:

15. Amastigotes in cardiac muscle and neurons _____
16. Amastigotes in macrophages in skin _____
17. Amastigotes in macrophages in spleen, liver, and bone marrow _____
18. Trypomastigotes in blood and brain _____

For questions 19 to 22 indicate the cestode that is transmitted to humans through the mode indicated:

19. Ingesting larvae in undercooked beef _____
20. Ingesting larvae in undercooked fish _____
21. Ingesting larvae in undercooked pork or eggs in food or water contaminated with human feces _____
22. Ingesting eggs in food contaminated with dog feces _____

For questions 23 to 25 indicate the stage in the life cycle of the given trematode that is infectious to humans:

23. *Clonorchis*_____
24. *Schistosoma* _____
25. *Paragonimus* _____

For questions 26 to 30 the stage in the life cycle of a given nematode (roundworm) responsible for causing human disease is stated. Indicate the matching nematode:

26. Larvae encyst in muscle causing myalgia _____
27. Worms in colon may cause rectal prolapse _____
28. Larvae migrate to lung, causing pneumonia _____
29. Female worm migrates out anus and lays eggs on perianal skin, causing itching _____
30. Worms disseminate to various tissues in immunocompromised (autoinfection) _____

For questions 31 to 36 some tissue nematodes are listed. For each nematode indicate the stage(s) in the lifecycle most responsible for symptoms experienced in humans:

31. *Ancylostoma caninum* _____
32. *Dracunculus* _____
33. *Wuchereria* _____
34. *Toxocara canis*_____
35. *Loa* _____
36. *Onchocerca* _____

For questions 37 to 40 match the insect vector indicated in column A with the parasites they transmit in humans as stated in the questions

PARASITE	COLUMN A: TRANSMITTING INSECT
37. *Trypanasoma cruzi*	a. Aedes moaquito
38. *Leishmania donovani*	b. Tse-tse fly
39. *Wuchereria bancrofti*	c. Blackfly
40. *Trypanosoma brucei*	d. Reduviid bug
	e. Anopheles mosquito
	f. Lice
	g. Rat flea

PART II: ANSWER ALL QUESTIONS (40 MARKS)

1. Describe the lifecycle of *Entamoeba histolytica* (5 marks)
2. State five (5) clinical signs and symptoms of *trichuriasis* (5 marks)
3. State five (5) methods of prevention and control of lymphatic *filariasis* (5 marks)
4. Describe the scotch tape diagnostic method for *Enterobius vermicularis* (5 marks)
5. Describe the medical management of *amoebiais* (5 marks)
6. Describe the life cycle of *Taenia solium* (5 marks)

PART III: LONG ANSWER QUESTION (20 MARKS)

1. Malaria is the leading cause of morbidity and mortality worldwide. Describe:
    a. the life cycle of malarial infection (6 marks)
    b. signs and symptoms associated with malaria infection (4 marks)
    c. management (i.e. diagnosis, treatment, prevention and control) of malaria (10 marks)