



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2024/2025

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF MEDICAL MICROBIOLOGY

### HMM 3315: MEDICAL HELMINTHOLOGY

DATE: JANUARY 2025

TIME: 3 HOURS

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#### INSTRUCTIONS:

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions – Answer each question on the answer booklet

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#### SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)

- Which of the following is a common characteristic of helminths?
  - Single-celled organisms
  - Multicellular organisms
  - Acellular organisms
  - Prokaryotic organisms
- The primary host for *Taenia saginata* is:
  - Pig
  - Dog
  - Cow

- D. Human
3. The infective form of *Ascaris lumbricoides* is:
- A. Adult worm
  - B. Egg containing a larva
  - C. Larval stage
  - D. Cystic form
4. Which of the following is a common symptom of helminth infections?
- A. Skin rash
  - B. Diarrhea
  - C. Neurological symptoms
  - D. All of the above
5. The disease caused by *Enterobius vermicularis* is:
- A. Ascariasis
  - B. Hookworm infection
  - C. Pinworm infection
  - D. Filariasis
6. What is the mode of transmission for *Schistosoma mansoni*?
- A. Ingestion of contaminated water
  - B. Skin penetration by larvae
  - C. Bites of infected mosquitoes
  - D. Direct contact with infected animals
7. Which of the following is known as the "giant roundworm"?
- A. *Enterobius vermicularis*
  - B. *Ascaris lumbricoides*
  - C. *Ancylostoma duodenale*
  - D. *Necator americanus*
8. *Onchocerca volvulus* is transmitted by:
- A. Sandflies
  - B. Tsetse flies

- C. Blackflies
  - D. Mosquitoes
9. Which part of the body is primarily affected by *Trichuris trichiura*?
- A. Small intestine
  - B. Large intestine
  - C. Liver
  - D. Lungs
10. The larval stage of *Taenia solium* that causes cysticercosis is:
- A. Oncosphere
  - B. Cysticercus
  - C. Proglottid
  - D. Scolex
11. The drug of choice for the treatment of *Schistosoma* infections is:
- A. Albendazole
  - B. Praziquantel
  - C. Ivermectin
  - D. Metronidazole
12. Which helminth is known to cause lymphatic filariasis?
- A. *Wuchereria bancrofti*
  - B. *Onchocerca volvulus*
  - C. *Loa loa*
  - D. *Trichinella spiralis*
13. How is *Strongyloides stercoralis* diagnosed?
- A. Blood smear
  - B. Stool examination
  - C. Skin biopsy
  - D. Urine analysis
14. The adult worm of *Dracunculus medinensis* primarily resides in the:
- A. Intestine

- B. Liver
  - C. Subcutaneous tissues
  - D. Lymph nodes
15. The condition caused by *Ancylostoma duodenale* is known as:
- A. Pinworm infection
  - B. Hookworm infection
  - C. Tapeworm infection
  - D. Whipworm infection
16. The intermediate host for *Echinococcus granulosus* is:
- A. Dog
  - B. Sheep
  - C. Human
  - D. Cat
17. A 12-year-old girl presents with perianal itching, especially at night. Her mother reports she has irritable and has trouble sleeping. A tape test reveals eggs. What is the most likely organism causing symptoms?
- A. *Ascaris lumbricoides*
  - B. *Enterobius vermicularis*
  - C. *Ancylostoma duodenale*
  - D. *Trichuris trichiura*
18. *Diphyllobothrium latum* infection is acquired by consuming:
- A. Undercooked pork
  - B. Raw or undercooked fish
  - C. Contaminated water
  - D. Raw vegetables
19. Which of the following helminths causes river blindness?
- A. *Wuchereria bancrofti*
  - B. *Onchocerca volvulus*
  - C. *Loa loa*

D. *Dracunculus medinensis*

20. *Taenia solium* is commonly known as the:

- A. Beef tapeworm
- B. Pork tapeworm
- C. Fish tapeworm
- D. Dog tapeworm

**SECTION B: SHORT ANSWER ALL QUESTIONS (40 MARKS)**

1. Describe the clinical features of filariasis and the long-term consequences of the disease. (5 marks)
2. Describe the significance of eosinophilia in diagnosing helminth infections? (5 marks)
3. Discuss the potential complications of untreated enterobiasis (pinworm infection). (5 marks)
4. Explain hygiene and sanitation play a role in the prevention of helminth infections? (5 marks)
5. Highlight the role does the immune response play in helminth infections, and how do helminths evade it (5 marks)
6. Define helminths and categorize them into their main groups. (5 marks)
7. Explain the pathophysiology of hookworm infections and their impact on human health. (5 marks)
8. Describe the clinical manifestations associated with strongyloidiasis? (5 marks)

**SECTION C: LONG ANSWER TWO QUESTIONS (40 MARKS)**

1. A 45-year-old male farmer living in a rural area of a tropical country presents to the clinic symptoms of abdominal pain, jaundice, and unexplained weight loss over the past few months. He has a history of consuming raw water plants from local water sources and has had close contact with cattle.
  - a) Identify the causative agent based on the above clinical history (1 marks)
  - b) Describe the life cycle of the agent identified above thinking (9 marks)
  - c) Explain any three diagnostic methods used in the laboratory to identify the agent

(5 marks)

d) State one treatment for the disease caused by the agent (1 mark)

e) State preventive and control measures of the organism (3 marks)

2. A 35-year-old male patient from a rural area in West Africa presents to the clinic with comp of intense itching and skin rashes over his arms and legs. He reports that the itching has been progressively worsening over the past six months. The patient also mentions blurred vision occasional headaches. He has a history of working in agricultural fields near rivers, where he often gets bitten by insects.

a) Explain the term intermediate host and identify the intermediate host based the above history (2 marks)

b) Identify the causative agent based on the above history (2 marks)

c) Describe three clinical characteristics of the above organism (6 marks)

d) Describe the life cycle of the above organism (8 marks)

3. A 32-year-old male, John, presents to the outpatient clinic with complaints of abdominal discomfort, intermittent diarrhea, and noticeable weight loss over the past month. He mentions that he recently returned from a hiking trip where he consumed undercooked beef at a local campsite. He has no significant past medical history and is otherwise healthy.

a) Identify the causative agent (1 mark)

b) Describe its lifecycle clearly highlighting the intermediate host, definitive I and infective stage. (9 marks)

c) Identify the preferably sample for diagnosis a describe a procedure how y will process and expected results (7 marks)

d) State control and preventive measures (3 marks)