



MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**Special / Supplementary Fourth Year Examination for Degree of
Bachelor of Science in Biology**

**UNIT CODE SZL405 UNIT NAME MEDICAL
PROTOZOOLOGY**

Date----- Time -----

Instructions

- i. Answer question 1 (compulsory) and any other two questions;
- ii. Illustrate your answers with diagrams wherever appropriate.

1. (Compulsory Question – 30 marks)

- a. Illustrate the structure of a named protozoan of medical importance (3 marks)
- b. Briefly explain how *Toxoplasma gondii* infects man (3 marks)
- c. Outline the methods of asexual reproduction amongst pathogenic protists (3 marks)
- d. Explain factors that predispose man to suffer from Leishmaniasis (3 marks)
- e. Explain the locomotory structures present in parasitic protozoa (3 marks)
- f. Outline three positive economic importance of protozoan parasites (3 marks)
- g. Briefly explain the management of intestinal Coccidia (3 marks)
- h. Briefly discuss any three management practices of intestinal protozoa (3 marks)
- i. Discuss how malaria is transmitted to man (3 marks)
- j. Explain the infections of the human brain by any three protozoans (3 marks)

2. Discuss the life cycle of a named malaria parasite. (20 marks)

- 3 a. Explain factors that promote drug resistance to *Plasmodium falciparum* 8 marks
b. Explain the mechanisms of prevention of protistan infections to man from domestic canidae (12 marks)
- 4 Compare Chagas disease with HAT. 20 marks
5. Discuss the various protozoan infections of the Circulatory system of man (20 marks)



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SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**Special / Supplementary third Year Examination for Degree of
Bachelor of Science in Biology**

**UNIT CODE SZL307 UNIT NAME FUNDAMENTALS OF
IMMUNOLOGY**

Date----- Time -----

Instructions

- i. Answer question 1 (compulsory) and any other two questions;
- ii. Illustrate your answers with diagrams wherever appropriate.

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- i. Illustrate the structure of an Ig molecule 3 marks
- ii. Explain the properties of the short chain of an Ig molecule 3 marks
- iii. Outline traffic by lymphocytes in a mammalian body 3 marks
- iv. Compare the structure and function of various agranulocytes 3 marks
- v. Outline the actions that follow activation of the complement pathway 3 marks.
- vi. Outline the properties of IgM 3marks
- vii. Differentiate between an epitope and a paratope 3 marks
- viii. Explain the roles of any three organs of the immune system 3 marks
- ix. Explain non-susceptibility to pathogens as a body defense mechanism 3 marks
- x. Explain factors that characterize an antigen – antibody reaction 3 marks

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| 2. Discuss the role of blood in the immune system of the body | 20 marks. |
| 5. Discuss the autoimmune disorders. | 20 marks |
| 3 a. Explain immunity to viral infections in man | 8 marks. |
| b. Discuss bonding between and antigen and an antibody. | 12 marks |
| 4. Discuss the types of hypersensitivity reactions inherent in man | 20 marks |



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SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

Special / Supplementary third Year Examination for Degree of
Bachelor of Science in Biology

UNIT CODE SZL406 UNIT NAME MEDICAL
HELMINTHOLOGY

Date----- Time -----

Instructions

- i. Answer question 1 (compulsory) and any other two questions;
- ii. Illustrate your answers with diagrams wherever appropriate.

Question 1. – Compulsory (30 marks) –

- a. Outline a laboratory procedure for diagnosing anaemia. 3 marks
- b. Briefly describe how infection to man by *Dipylidium caninum* occurs 3 marks
- c. Explain any three methods of prevention of infection by *Schistosoma haematobium*.
- d. Explain why Hydatidosis is considered as Zoonotic. 3 marks
- e. Explain the effects of a heavy infestation by *Taenia saginata* in man. 3 marks
- f. Explain the symptoms exhibited following infection by a filaria worm in man. 3 marks
- g. Explain the predilection sites of any three nematodes. 3 marks
- h. Explain the symptoms characteristic to infections by pinworms in man. 3 marks
- i. Explain the predisposing factors to infection of nematodes to man. 3 marks
- j. Illustrate the structure of a gravid proglottid 3 marks

Question 2 (20 marks)

Discuss the epidemiology, and a contemporary method of managing lymphatic filariasis in Kenya

Question 3 (20 marks)

Discuss the major taxonomy of helminths infectious to man.

Question 4 (20 marks)

- a. Discuss how man gets infected with the Lancet fluke 6 marks
- b. Discuss the lifecycle of *Ascaris lumbricoides* 14 marks

Question 5 (20 marks)

Discuss how molluscs contribute to the epidemiology of helminthic infections of man



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SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

Special / Supplementary third Year Examination for Degree of
Bachelor of Science in AGEDE

UNIT CODE KST301 UNIT NAME AGRICULTURAL
ENTOMOLOGY

Date----- Time -----

Instructions

- i. Answer question 1 (compulsory) and any other two questions;
- ii. Illustrate your answers with diagrams wherever appropriate.

1. – Compulsory (30 marks)

- a) Explain the regulation of insecticide use in Kenya (3 marks)
- b) Describe the mouthparts of the desert locust *Schistocerca gregaria* (3 marks)
- c) Explain why diapause is important in the lifecycle of an insect (3 marks)
- d) Characterize ametabolous metamorphosis in insects (3 marks)
- e) Describe the tracheal system of insects (3 marks)
- f) Outline the features of the cassava green mite (3 marks)
- g) Outline the characteristics of the order Hemiptera (3 marks)
- h) Explain the economic importance of insect *Sitotroga cerealella* (3 marks)
- i) Outline the structure of the female reproductive system of an insect (3 marks)
- j) differentiate between a pesticide and an insecticide (3 marks)

- 2 Discuss the biology of a named desert locust and explain its economic importance 20 marks
- 3 Discuss the role of fumigation in the management of insect pest problems 20 marks

- 4 Discuss how you would prevent damage of stored grain by insects
- 5 Discuss the economic importance of named bruchids

20 marks
20 marks