



# KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

INSTITUTIONAL BASED PROGRAMME (DECEMBER SESSION)

EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN MEDICAL

BIOCHEMISTRY

**SBC 504: BIOCHEMISTRY OF HELMINTHS**

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DATE: FRIDAY 4<sup>TH</sup> MAY 2012

TIME: 9.00 A.M. – 12.00 P.M.

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## **INSTRUCTIONS**

**WRITE ALL YOUR ANSWERS IN THE EXAMINATION ANSWER BOOKLET**

**SECTION A:** *Answer all questions (5 marks each)*

1. Explain the mechanisms for uptake of purine and pyrimidines by helminthes.
2. Using a schematic presentation show how the *de novo* synthesis of pyrimidines occurs in helminthes.
3. Write down the expression for the 'adenylate energy charge' of a cell. This charge ranges between which values in (a) mammalian tissues and (b) in parasitic helminthes.
4. List down the reasons that make the application of electrophoretic methods to parasites complicated.
5. Explain how the drug niridazole exerts its anthelmintic activity against *Schistosoma mansoni* by affecting glycogen metabolism.
6. Summarise the mechanisms that are thought to enable the pro-oncophoral stages of the cestode *Taenia taeniaformis* avoid the effects of immunity.

7. Identify three methods by which uncouplers of oxidative phosphorylation will inhibit aerobic energy metabolism. Name two groups of compounds which are uncouplers of oxidative phosphorylation that are effective fasciolicides.
8. Using a diagram illustrate the purine nucleotide cycle in helminthes.

**SECTION B: Answer any THREE questions (20 marks each)**

1. Discuss the molecular mechanisms that enable helminthes and other parasites to develop resistance against drugs targeting them.
2. Using both text and diagram describe the process of homolactate fermentation in helminthes.
3. Describe the activities of modulating immunity in helminthes.
4. Selectivity of antiparasitic compounds for their targets is brought about by a variety of factors, discuss them.