

**Answer question 1 from section A and one question from section B. Both section A and section B carry equal marks.**

**SECTION A (Answer question 1)**

1. Write short notes on EACH of the following:

- a. Give two examples of how next generation nucleic acid sequencing is being used to understand parasite biology.
- b. Using a diagram, illustrate how trypanosomes produce mature mRNA.
- c. What diagnostic tests are used for the different clinical stages of African trypanosomiasis?
- d. What drugs are currently used to treat leishmaniasis? Describe the major problems associated with the use of these therapeutics.

**SECTION B (Chose one question from questions 2 - 6)**

2. Discuss how the mechanisms of host cell invasion of *Toxoplasma gondii* and *Leishmania spp.* differ and how this impacts disease transmission.
3. What are the mechanisms that African trypanosomes use to avoid the innate host immune response?
4. Write an essay on the mechanisms of cytoadherence and the role of antigenic variation in malaria pathogenesis.
5. Drug-resistance threatens to undermine many treatments used against parasitic protozoan disease. Using African trypanosomiasis as an example, describe our understanding of mechanisms of resistance to currently used drugs. How might this knowledge be exploited to combat disease and aid development of new chemotherapeutic agents?
6. A combination therapy is used for the treatment of Human African Trypanosomiasis. Describe the advantages of this approach over current monotherapies and give details of the proposed mechanisms of action.

**End of paper**