



Name:

Candidate no:

# MICROBIOLOGY

## Elective Module MICRO III (Parasitology)

### INSTRUCTIONS TO CANDIDATE

**Time allowed is three (3) hours**

Answers should be written in the answer book provided, writing on the right hand page only leaving the margin blank. The facing page may be used for rough work if desired

The examination consists of:

- 2 essay style questions; each question is worth 35 marks.  
(Allow approximately 30 mins each)
- 20 short answer questions; each question is worth 5 marks.

Time allowed for writing is three (3) hours. There is an additional initial reading time of 15 minutes during which notes only may be written on the examination paper but no writing in the examination answer books is permitted at this time.

Candidates may attempt either the essay questions or the short answer questions first.

No papers or books of any kind may be taken into the examination room. No electronic devices of any type\* are to be taken in to or accessed in the examination room. A non-programmable calculator only is permitted.

\*This includes, but is not restricted to: phones, iPads, iPods, eBook readers, MP3 players, memory sticks (flash drives) and WiFi enabled devices of all types.

**The examination paper may not be removed from the examination room**

## ESSAY QUESTIONS

Each question is worth 35 marks. Suggested time allocation is 30 minutes per question.

Essay questions (35 marks each)

- Q1.** Discuss the laboratory diagnosis of Malaria and identification of malarial species using both traditional microscopic techniques as well as the role of molecular and immunochemical methods.
- Q2.** Discuss the *Strongyloides stercoralis* infection under the following headings.
- 1) Epidemiology and spectrum of disease
  - 2) Laboratory investigation of *Strongyloides infection* in
    - a. An indigenous child in Western Queensland
    - b. The immuno-compromised Vietnam veteran.

## SHORT ANSWER QUESTIONS

Write brief notes/comments on the following questions and statements. Each question and statement is worth 5 marks. Suggested time allocation is 5 minutes per question.

- Q1.** What diseases are associated with the following parasites?
- a. *Naegleria fowleri*
  - b. *Trypanosoma cruzi*
  - c. *Leishmania donovani*
- Q2.** List three preservatives/fixatives used in Parasitology and briefly mention the advantages and disadvantages of each.
- Q3.** Describe using diagrams the microscopic morphology of the following amoeba indicate approximate size
- a. *Entamoeba histolytica* trophozoites
  - b. *Entameoba coli* trophozoites
  - c. *Iodamoeba butschlii* cysts

What microscopic feature distinguishes trophozoites of *E. histolytica* from non-pathogenic strains of *E. histolytica* (*E dispar*)

- Q4.** Briefly discuss the clinical significance of *Blastocystis hominis*.
- Q5.** Describe the staining procedure for *Cryptosporidium sp.*
- Q6.** What morphological features distinguish the microfilarial nematodes

- Q7.** Discuss the detection of *Dientamoeba fragilis* in the laboratory
- Q8.** What organism is associated with Primary Amoebic Meningoencephalitis? Briefly describe the laboratory investigation of this condition.
- Q9.** Describe the life cycle of the following helminths.
- a. *Echinococcus granulosus*
  - b. *Fasciola sp.*
- Q10.** Using diagrams illustrate the difference between the ova of *Schistosoma mansonii*, *S. japonicum*, *S. haematobium*.
- Q11.** What is a coenurus? What species are associated with this developmental stage? How are humans infected?
- Q12.** Describe the life cycle of *Angiostrongylus cantonensis*?
- Q13.** Briefly discuss the investigation of possible *Strongyloides stercoralis* infection in a Vietnam veteran who has a skin rash and a persistently elevated eosinophil count.
- Q14.** Describe the life cycle of *Echinococcus granulosus* and how do humans become infected?
- Q15.** What are the advantages and disadvantages of different routine preparations for used to conduct microscopy for ova cysts and parasites?
- Q16.** What different approaches would you employ when receiving a faecal sample for OCP determination if the patient was
- a. A nine-year old caucian boy from a wealthy urban suburb
  - b. An 45 year old aboriginal man from Alice Springs
  - c. A pregnant Sudanese refugee recently arrived in Australia
- Q17.** What is the significance of a reactive PCR test for *D. fragilis*?
- Q18.** Describe the ways of preventing laboratory acquired parasitic infections. What parasites (and stage of life cycle) have the highest risk to laboratory personnel.
- Q19.** What organism(s) are referred to as Hookworm? What is the geographical distribution and symptoms associated the diseases caused?
- Q20.** List five species of parasites which may be detected by examination of a blood film.