



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS (MAIN PAPER)**

**2023/2024 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER EXAMINATIONS  
FOR THE DEGREE  
OF  
BACHELOR OF SCIENCE IN MEDICAL LABORATORY  
SCIENCES**

**COURSE CODE:** BML 311

**COURSE TITLE:** MEDICAL PROTOZOOLOGY

**DATE:** 5<sup>TH</sup> DECEMBER 2023

**TIME:** 8.00-10.00AM

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**INSTRUCTIONS TO CANDIDATES**

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). **Answer all questions. DO NOT WRITE ON THE QUESTION PAPER.**

**TIME:** 2 Hours

MMUST observes ZERO tolerance to examination cheating

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This Paper Consists of 4 Printed Pages. Please Turn Over

**SECTION A: Multiple Choice Questions (20 Marks)**

1. Steatorrhea is a phenomenon found in which protozoan species?
  - A. *Balantidium* species
  - B. *Cryptosporidium* species
  - C. *Trichomonas* species
  - D. *Giardia* species
2. Which microscope objective is used to visualize protozoa features in wet preps?
  - A. 10X
  - B. 100X
  - C. 80X
  - D. 40X
3. Which protozoan is not a mastigophoran?
  - A. *Trypanosoma cruzi*
  - B. *Giardia lamblia*
  - C. *Leishmania donovani*
  - D. *Entamoeba histolytica*
4. \_\_\_\_\_ is an intestinal protozoan flagellate.
  - A. *Trichomonas vaginalis*
  - B. *Trypanosoma brucei*
  - C. *Naegleria fowleri*
  - D. *Giardia lamblia*
5. The following diagnostic feature(s) best describes *Iodamoeba butschlii*.
  - A. Diffuse glycogen bars
  - B. Elongated chromatin bodies
  - C. Chromatin bars with sharp/jagged ends
  - D. Glycogen bars that stain reddish-brown with iodine
6. The refractive index for 100X oil immersion objective used in microscopy is \_\_\_\_\_.
  - A.  $n=1.210$
  - B.  $n=1.350$
  - C.  $n=1.420$
  - D.  $n=1.510$
7. The mirror used with the 100X power microscope objective is \_\_\_\_\_.
  - A. Flat
  - B. Condensed
  - C. Biconcave
  - D. Concave
8. *Entamoeba gingivalis* in its habitat is a good example of \_\_\_\_\_.
  - A. Symbiosis
  - B. Parasitism
  - C. Mutualism
  - D. Commensalism

9. Which of the following protozoan inhabits the buccal cavity?
- Iodamoeba butschlii*
  - Endolimax nana*
  - Dientamoeba fragilis*
  - Trichomonas tenax*
10. One main factor that leads to a serious falciparum malaria attack is \_\_\_\_\_
- Merozoites usually attack the liver's parenchymal cells
  - Attacked host cells have a normal circulation to vital body organs
  - One schizont ruptures to give rise to four merozoites
  - All merozoites attack and destroy the host's red blood cells
11. Schuffner's dots appears prominently red after staining in which type of malaria?
- Malariae
  - Falciparum
  - Vivax
  - Ovale
12. This hemoflagellate developmental stage is found both in the vertebrate and vector.
- Opisthomastigote
  - Epimastogote
  - Choanomastigote
  - Trypomastigote
13. The double nucleated trophozoites in purged samples are a diagnostic feature of \_\_\_\_\_
- Endolimax nana*
  - Iodamoeba butschlii*
  - Entamoeba gingivalis*
  - Giardia intestinalis*
14. This protozoan invades the nervous system through the nose in swimmers.
- Trypanosoma gambiense*
  - Plasmodium vivax*
  - Babesia microti*
  - Naegleria fowleri*
15. This protozoan has an undulating membrane.
- Balantidium coli*
  - Giardia lamblia*
  - Cryptosporidium parvum*
  - Trypanosoma brucei*
16. The main source of parasitic protozoan infections is \_\_\_\_\_
- Occupation
  - Healthy carriers
  - Exposure
  - Contaminated foods and drinks

17. Men are main vectors of this protozoan parasite.
- Cryptosporidium parvum*
  - Trypanosoma gambiense*
  - Plasmodium falciparum*
  - Trichomonas vaginalis*
18. Kinyoun's Iron hematoxylin stains protozoan nuclei \_\_\_\_\_
- Pink/deep purple
  - Grey blue
  - Dark-grey/black
  - Dark-blue/black
19. Mucocutaneous leishmaniasis (Espundia) is caused by which protozoa species?
- Leishmania tropica aethiopica*
  - Leishmania tropica Mexicana*
  - Leishmania donovani*
  - Leishmania braziliensis*
20. In protozoa Syngamy form of reproduction, \_\_\_\_\_
- Nucleus divides first followed by the cytoplasm to form several cells
  - A daughter cell grows to full size from the mother cell
  - Nucleus and cytoplasm divides into 2 equal parts to form new cells
  - Female and male gametes fuse to produce zygotes

**SECTION B: Short Answer Questions (40 Marks)**

- Enumerate the various modes of protozoan locomotion, giving examples (5 mks)
- Illustrate the 4 main developmental stages seen in blood and tissue flagellates (5 mks)
- Draw and label the trophozoite of the protozoa that causes giardiasis (5 mks)
- Describe the morphology (trophozoite and cyst) of *Entamoeba histolytica* (5mks)
- Differentiate between:
  - Definitive host and Intermediate host (1mk)
  - Asexual and Sexual reproduction (1mk)
  - Encystation and Excystation (1mk)
  - Holophylic and Holozoic nutrition (1mk)
  - Commensalism and Mutualism in protozoa relationships (1mk)
- Outline five strategies used in the control of parasitic infections (5 mks)
- Describe the diagnosis of intestinal amoebiasis in the laboratory (5 mks)
- List five main biological signs associated with *falciparum* malaria infection (5 mks)

**SECTION C: Long Answer Questions (60 Marks)**

- Explain the Ritchie's Formal-Ether stool concentration technique for parasite diagnosis (20mks)
- Discuss the life cycle of the *falciparum* malaria causing protozoan parasite (20mks)
- Describe the diagnosis of parasitic infections (20mks)