



(University of Choice)

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

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS (MAIN PAPER)
2021/2022 ACADEMIC YEAR**

SECOND YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES**

COURSE CODE: BML 225

COURSE TITLE: MEDICAL MYCOLOGY

DATE: 21/04/2022

TIME: 8.00 -10.00 am

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

This Paper Consists of 4 Printed Pages. Please Turn Over

Section A: Multiple choice questions (MCQ's) (20mks)

1. Which one of the following best describes a fungal somatic structure?
 - a) Fragmentation of the soma
 - b) Adventitious septa
 - c) The optimum temperature range of (20 – 30) °C
 - d) The common black mould
2. Which one of the following is not a merit of fungi?
 - a) Ergotism which occurs in the countries where rye is grown for bread
 - b) Nutrient and carbon recycling.
 - c) They have fermentation property.
 - d) Important sources of antibiotics
3. Which one of the following is not a source of exposure to mycotoxins.
 - a) Inhalation of airborne spores
 - b) Milk
 - c) Wheat flour
 - d) Grains
4. Fungi that are not known to produce any sexual spores are called
 - a) Mould
 - b) Yeast
 - c) Mycelium
 - d) Deutromycetes
5. Which one of the following species of fungi result in food poisoning when egested
 - a) *Tineacorporis*
 - b) *Erysiphegraminis*
 - c) *Aspergillus*
 - d) *Fusarium* sp
6. Which one of the following hyphal fungi is not coenocytic
 - a) Rhizopus and Mucor
 - b) *Cryptosporidium neoformans*
 - c) Oomycetes
 - d) *Candida albicans*
7. Which one of the following fungal elements causes ringworms?
 - a) *Phytophthora infestans*
 - b) *Tinea worms*
 - c) *Tineacorporis*
 - d) *E.floccosum*
8. Which one of the following fungal species cause pityriasis versicolor
 - a) *Candida albicans*
 - b) *Malassezia furfur*
 - c) *Piedriahortae*
 - d) *Trichosporon beigelli*
9. Which one of the following ways describes the transmission of histoplasmosis?
 - a) Through inhalation of spores contaminated with excreta from bats, chicken or other birds
 - b) By ingestion in food
 - c) Through body contact with an infected person
 - d) Blood transfusion
10. Which one of the following species of fungi is best used as a research tool?
 - a) Mycotoxins
 - b) The red mould *Neurosporacrassa*
 - c) Yeast cells
 - d) Yeast-like pseudohyphae

11. Which one of the following fungal agents cause mycosis that can be diagnosed by a latex agglutination test on the spinal fluid for capsular polysaccharide antigen.
 - a) *Cryptococcus neoformans*
 - b) *Histoplasma capsulatum*
 - c) *Aspergillus fumigatus*
 - d) *Candida albicans*
12. Which one of the following statements concerning *Cryptococcus neoformans* is not correct?
 - a) Its natural habitat is the soil, especially associated with pigeon feces
 - b) Budding yeasts are found in the lesions
 - c) The initial site of infection is usually the lung
 - d) Pathogenesis is related primarily to the production of exotoxin A.
13. Which one of the following body organs are mostly affected by invasive candidiasis
 - a) Skin
 - b) Lung
 - c) Intestines
 - d) Genital system
14. Which one of the listed is not classified in the genera Dermatophytes
 - a) *Microsporum* species
 - b) *Trichophyton* species
 - c) *Sporothrix* species
 - d) *Epidermophyton* species
15. Which antifungal drug binds to ergosterol in the fungal membrane and forms spores in the membrane
 - a) Amphotericin
 - b) 5-fluorocytosine
 - c) Terbinafine
 - d) The azoles
16. Which one of the following fungal species of *Trichophyton* cause endothrix infection include:
 - a) *Trichophyton tonsurans*
 - b) *Trichophyton mycetoma*
 - c) *Madurae*
 - d) *Microsporum* species
17. Which one of following species of actinomycetes are diagnosed by the presence of mycetoma granules which are gram positive with thin branches, 1µm diameter and appear fragmented in KOH.
 - a) *Madurae*
 - b) *Aspergillus pelletieri*
 - c) *S. somaliensis*
 - d) *M. mycetoma*
18. Which one of the following is not a factor of fungal pathogenicity?
 - a) Ability to adhere to host cells by way of cell wall glycoproteins
 - b) Production of capsules allowing them to resist phagocytosis
 - c) Ability to secrete mycotoxins
 - d) Most fungi are mesophilic and cannot grow at temperatures above 37 °C
19. Which one of the following combinations of mycoses can be diagnosed by demonstrating fungal cells that reproduce by budding in the infected patient's tissues?
 - a) Candidiasis, Cryptococcosis, and Sporotrichosis
 - b) Mycetoma, candidiasis and mucormycosis
 - c) Tinea corporis, tinea unguium, and tinea versicolor
 - d) Sporotrichosis, mycetoma and aspergillosis

20. Which antifungal drug blocks squalene epoxidase enzyme to prevent squalene conversion to ergosterol.
- Amphotericin B
 - 5-fluorocytosine
 - Terbinafine
 - The azoles

Section B: short answer questions (SAQ's) (40marks)

- State the difference between slime molds and true fungi (3 marks)
- List examples of mycoses and state the types of specimens collected for identification of fungi (5marks).
- Describe the laboratory diagnosis of Cryptococcosis (4 marks)
- Describe the KOH test procedure for fungal laboratory diagnosis (6marks)
- Outline the ingredients and preparation of Sabourauds dextrose agar medium for growing fungi in the laboratory(4marks)
- Describe diagnostic tests for maduromycosis (5marks)
- Describe the culturing of fungi for diagnosis of mycoses (5marks)
- State the difference between subcutaneous and systematic mycoses, giving an example of fungi under each class (4marks)
- Discuss the clinical manifestations of Candidiasis and outline the clinical materials for the infections' laboratory diagnosis (4 marks)

Section C: Long answer questions (LAQ's) (60marks)

- Describe the Germ tube test and its importance in a Medical mycology laboratory (20mks)
- Discuss the three general types of reproduction recognized in fungi (20 marks)
- (a) Discuss the mode of action of antifungal classes giving two examples in each class and an example of fungi they act on(10 marks)
(b) Provide details of clinical presentation, Laboratory diagnosis, treatment and management of superficial Histoplasmosis (10 marks)