



## **MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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### **University Examinations 2024/2025**

#### **SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICAL MICROBIOLOGY**

#### **HMM 3215: MEDICAL MYCOLOGY**

**DATE: JANUARY 2024**

**TIME: 3 HOURS**

#### **INSTRUCTIONS:**

Answer *All* questions

Ensure that all your answers are properly numbered

*Part I* multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

*Part II:* Short Answer Questions – Answer questions following each other on the answer booklet

*Part III:* Long Answer Questions – Answer each question on the answer booklet

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#### **SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)**

1. Which of the following organisms is the causative agent of 'Darling's disease'?

- a. *Paracoccidioides brasiliensis*
- b. *Exophiala werneckii*
- c. *Histoplasma capsulatum*
- d. *Blastomyces dermatitidis*

2. The fungi with Daisy-like spore arrangement is

- a. *Blastomyces dermatitidis*
- b. *Cryptococcus neoformans*
- c. *Paracoccidioides brasiliensis*

*d. Sporothrix schenckii*

3. Which antifungal drug Inhibits 13-(1 ,3)-D-glucan synthesis, which usually makes the crossbridges in the fungal cell wall thereby inhibiting its formation.

- Amphotericin
- 5-fluorocytosine
- The azoles
- Terbinafine

4. Fungi often colonize lesions due to other causes. Which of the following is least likely to be present as colonizer

- Candida
- Sporothrix
- Mucor
- Aspergillus

5. A girl who pricked her finger while pruning some rose bushes develops a local pustule that progresses to an ulcer. Several nodules then develop along the local lymphatic drainage. The most likely agent is

- Aspergillus fumigatus*
- Sporothrix schenckii*
- Cryptococcus neoformans*
- Candida albicans*

6. Immunocompromised persons suffer from several fungal diseases. Which of the following is the least frequently associated

- Cryptococcus neoformans*
- Aspergil/usfumigatus*
- Malassezia furfur*
- Mucor* species

7. Each of the following statements concerning *Cryptococcus neoformans* are correct EXCEPT

- Its natural habitat is the soil, especially associated with pigeon feces
- 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.

8. Fungal cells that reproduce by budding are seen in the infected tissues of patients with

- a. Candidiasis, cryptococcosis, and sporotrichosis
- b. Mycetoma, candidiasis and mucormycosis
- c. Tinea corporis, tinea unguium, and tinea versicolor
- d. Sporotrichosis, mycetoma and aspergillosis

9. Which of the following is not the characteristics of histoplasmosis

- a. Person to person transmission
- b. Specific geographic distribution
- c. Yeasts in tissue
- d. Mycelial phase in the soil

10. Infection with dermatophyte is most often associated with

- a. Intravenous drug abuse
- b. Inhalation of the organism from contaminated bird feces
- c. Adherence of the organism to perspiration moist skin
- d. Fecal-oral transmission

11. Each of the following statements concerning *Candida albicans* is correct except

- a. *C. albicans* is a budding yeast that forms pseudohyphae when it invades tissue
- b. *C. albicans* causes thrush
- c. *C. albicans* is transmitted primarily by respiratory aerosol
- d. Impaired cell mediated immunity is an important predisposing factor to disease

12. The bread mold *Rhizopus stolonifer* belongs to which of the following fungal divisions?

- a. Ascomycota
- b. Deuteromycota
- c. Oomycota
- d. Zygomycota

13. The number of sets of chromosomes in a dikaryotic cell

- a. Is greater than diploid cell

- b. Is lesser than diploid cell
- c. Is equal to diploid cell
- d. Is equal to haploid cell

14. Which of the following is the cause of sporotrichosis?

- a. *Coccidioides immitis*
- b. *Sporothrix schenckii*
- c. *Cryptococcus neoformans*
- d. *Histoplasma capsulatum*

15. Which of the following is NOT true regarding treatment of tinea capitis?

- a. 1-2 months
- b. Terbinafine cream
- c. Shampoo used frequently
- d. Topical azoles

16. Fungi that are more virulent and cause disease in healthy hosts are classified as?

- a. Superficial
- b. Cutaneous
- c. Subcutaneous
- d. Systemic

17. Which of the following is not dimorphic and is the only medically important encapsulated yeast?

- a. *Histoplasma capsulatum*
- b. *Cryptococcus neoformans*
- c. *Coccidioides immitis*
- d. *Candida albicans*

18. Which drug do fungi take it up using a permease that our cells do not make? It gets incorporated into the fungal RNA in place uracil.

- a. Amphotericin
- b. 5-fluorocytosine
- c. Terbinafine c

d. Caspofungin

19. Which antifungal drug inhibits cytochromes (cytochrome 1)450)? This prevents ergosterol formation, which disrupts membrane function and growth

- Amphotericin
- 5-flurocytosine
- Terbinafine
- The azoles

20. Which of the following shows up as typical "ringworm" lesions

- Tinea barbae
- Tinea capitis
- Tinea cruris
- Tinea unguium

### **SECTION B: SHORT ANSWER ALL QUESTIONS (40 MARKS)**

- Describe the pathological effects of aflatoxins on human health. [8 marks]
- Highlight different types of media used to culture fungi and their purposes. [8 marks]
- Distinguish between aspergillosis and cryptococcosis in terms of etiology and symptoms. [8 marks]
- Write short notes on immunological methods for diagnosis of fungal infections. [8 Marks]
- List three common dermatophytes and describe how hairs plucked from a patient's head can be used for their laboratory identification. [8 Marks]

### **SECTION C: LONG ANSWER TWO QUESTIONS (40 MARKS)**

- Discuss diseases caused by *Candida albicans* as well as the respective clinical features diagnosis and treatment. [20 Marks]
- (a) State three opportunistic infections caused by fungi, the parts of the human body that may be affected, and the name(s) of the etiological agent(s). [9 Marks]  
(b) Describe four types of fungal spores. [8 Marks]  
(c) Outline laboratory diagnosis of eumycetoma [3 Marks]

3. Discuss fungal pneumonia under the following headings

- a) Aetiology [3 Marks]
- b) Transmission [4 Marks]
- c) Pathogenesis [8 Marks]
- d) Diagnosis [5 Marks]