



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA IN MEDICAL LABORATORY SCIENCES**

**AML 2306 : MEDICAL MYCOLOGY**

**END OF SEMESTER EXAMINATION**

**SERIES: AUGUST 2019**

**TIME: 2 HOURS**

**DATE:** Pick Date Select Month Pick Year

## **Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

**Circle the correct answer in section A.**

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## Section A

1. Which of the following organisms is the causative agent of 'Darling's disease'?
  - a. *Paracoccidioides braziliensis*
  - 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 braziliensis*
  - d. *Sporothrix schenckii*
3. Which antifungal drug Inhibits  $\beta$ -(1,3)-D-glucan synthesis, which usually makes the cross-bridges in the fungal cell wall thereby inhibiting its formation.
  - a. Amphotericin
  - b. 5-fluorocytosine

- c. The azoles
  - d. Terbinafine
4. Fungi often colonize lesions due to other causes. Which of the following is least likely to be present as colonizer
- a. *Candida*
  - b. *Sporothrix*
  - c. *Mucor*
  - d. *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
- a. *Aspergillus fumigatus*
  - b. *Sporothrix schenckii*
  - c. *Cryptococcus neoformans*
  - d. *Candida albicans*
6. Immunocompromised persons suffer from several fungal diseases. Which of the following is the least frequently associated
- a. *Cryptococcus neoformans*
  - b. *Aspergillus fumigatus*
  - c. *Malassezia furfur*
  - d. *Mucor* species
7. Each of the following statements concerning *Cryptococcus neoformans* are correct EXCEPT
- 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.
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
- intravenous drug abuse
  - inhalation of the organism from contaminated bird feces
  - adherence of the organism to perspiration moist skin
  - Fecal-oral transmission
11. Each of the following statements concerning *Candida albicans* is correct except
- C. albicans* is a budding yeast that forms psuedohyphae when it invades tissue
  - C. albicans* causes thrush
  - C. albicans* is transmitted primarily by respiratory aerosol
  - 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?
- Ascomycota
  - Deuteromycota
  - Oomycota
  - Zygomycota
13. The number of sets of chromosomes in a dikaryotic cell
- Is greater than diploid cell
  - Is lesser than diploid cell
  - Is equal to diploid cell
  - Is equal to haploid cell
14. Which spore is on a club and results from the fusion of two nuclei from different strains of the same fungi?
- Ascospore
  - Basidiospore
  - Blastospore
  - Conidiospore
15. Which of the following is NOT true regarding treatment of tinea capitis?
- 1-2 months
  - Terbinafine cream
  - Shampoo used frequently
  - Topical azoles
16. Fungi that are more virulent and cause disease in healthy hosts are classified as?
- Superficial
  - Cutaneous
  - Subcutaneous
  - Systemic

17. Which of the following is not dimorphic and is the only medically important encapsulated yeast?
- Histoplasma capsulatum*
  - Cryptococcus neoformans*
  - Coccidioides immitis*
  - 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 of uracil.
- Amphotericin
  - 5-fluorocytosine
  - Terbinafine
  - Caspofungin
19. Which antifungal drug inhibits cytochromes (cytochrome P450)? This prevents ergosterol formation, which disrupts membrane function and growth
- Amphotericin
  - 5-fluorocytosine
  - Terbinafine
  - The azoles
20. Fungi that infect outside layers of skin or hair only are classified as?
- Superficial
  - Subcutaneous
  - Systemic
  - Opportunistic
21. Which of the following shows up as typical “ringworm” lesions
- Tinea barbae
  - Tinea capitis
  - Tinea cruris
  - Tinea unguium
22. Which of the following is the cause of sporotrichosis?
- Coccidioides immitis*
  - Sporothrix schenckii*
  - Cryptococcus neoformans*
  - Histoplasma capsulatum*
23. Cutaneous Mycoses are also called
- Tineas or ringworms
  - True mycoses
  - Systemic mycoses
  - Voluntary mycoses

24. Which of the following is a subcutaneous Mycosis known as “rose-handler’s” disease
- Cryptococcosis
  - Histoplasmosis
  - Sporotrichosis
  - Tinea cruris
25. This drug is good for fungal meningitis since it can enter the CNS.
- Amphotericin
  - 5-fluorocytosine
  - Terbinafine
  - The azoles
26. Which antifungal drug binds to ergosterol in the fungal membrane and forms pores in the membrane?
- Amphotericin
  - 5-fluorocytosine
  - Terbinafine
  - The azoles
27. Which systemic mycosis is usually found in the soil of southwest U.S., Mexico, South America and is referred to as San Joaquin Valley Fever?
- Histoplasmosis
  - Coccidioidomycosis
  - Cryptococcosis
  - Blastomycosis
28. Which genus is not a Dermatophyte?
- Microsporum sp.
  - Trichophyton sp.
  - Epidermophyton sp
  - Histoplasma sp.
29. Which part of the fungal cell should a drug target so as to cause the least amount of damage to the human host?
- Cholesterol in cell membrane
  - Ergosterol in cell membrane
  - Nucleus
  - Ribosome
30. Which antifungal drug can have the following side effects? males – may develop breasts, females – irregular menstrual cycles liver toxicity
- Amphotericin
  - 5-fluorocytosine

- c. Terbinafine
- d. The azoles

31. What is the primary focus of infection for Systemic Mycoses

- a. Lung
- b. Heart
- c. Skin
- d. Liver

32. Which of the following is FALSE on treatment of tinea corporis?

- a. Topical treatment usually lasts 2-4 months
- b. Miconazole is used topically
- c. Clotrimazole is used topically
- d. Treatment can be stopped as soon as clearing is noted

33. Fungi reproduce by which of the following methods?

- a. Fission, as in bacteria
- b. Flowering, mostly in green fungi
- c. Fragmentation of hyphae
- d. Formation of numerous RNA copies

34. One of the following is FALSE about moulds

- a. Are filamentous with hyphae
- b. Produce conidia [spores]
- c. Produce fluffy colonies on solid agar
- d. Most molds have chlorophyll

35. The following is true about fungal samples

- a. Specimens do not require special transport media for culture submission
- b. Sterile containers should be used to prevent bacterial contamination
- c. Some fungi are fastidious
- d. Numerous sites are appropriate for culture

36. The main disadvantage of cyclohexamide in fungal media is

- a. Prevents rapidly growing molds from overgrowing dimorphics.
- b. It can suppress important fungi from growing.
- c. It is expensive
- d. It changes the original colour of media

37. The following acts as a negative stain in fungal identification processes

- a. 10% Potassium hydroxide
- b. Lactophenol cotton blue

- c. Calcofluor white stain
  - d. Indian ink
38. The following are dimorphic Fungi capable of causing systemic infections EXCEPT.
- a. Blastomyces dermatitidis
  - b. Cryptococcus neoformans
  - c. Paracoccidioides brasiliensis
  - d. Sporothrix schenckii
39. Nutritionally, fungi are best characterized as
- a. Photosynthetic autotrophs.
  - b. Obligate anaerobes.
  - c. Absorptive heterotrophs.
  - d. Ingestive heterotrophs.
40. Fungi are important in the production of all of the following commercial produces except
- a. Bread.
  - b. Beer.
  - c. Antibiotics
  - d. Rubber.

## Section B

1. You have been provided with a pus swab from a wound of a patient suspected to be diabetic, on gram stain, numerous gram positive big oval cells with some showing signs of budding are seen. Starting from the swab, describe how you would isolate and identify the suspect pathogen culturally. (20 marks)
2. Discuss;
  - a. The success of dimorphic fungi as potential pathogens citing 2 dimorphic and 2 true yeasts (10 marks).
  - b. Superficial mycoses citing at least 2 diseases and their causative agents (10 marks).
3. Describe asexual reproduction in fungi while differentiating it from sexual reproduction (20 marks).