



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES
END OF SEMESTER JANUARY - APRIL 2026 EXAMINATIONS

COURSE CODE AND TITLE: BSN 124: Medical Bacteriology and Mycology Main Examination

DATE: 9TH APRIL 2026

Duration: 2 HOURS Start: 9:00AM Finish: 11:00AM

INSTRUCTIONS

1. This exam is out of 70 marks.
2. This Examination comprises THREE Sections. Section I: Multiple Choice Questions (20 marks). Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 marks).
3. Answer ALL Questions.
4. Do NOT write anything on the question paper - use the back of your booklet for rough work if need be.

SECTION I: MULTIPLE CHOICE QUESTIONS (MCQs) (20 MARKS)

1. Stool cultures are important in the diagnosis of typhoid fever infections because: -
 - A. 25% of the cases are positive in the 3rd week of infection
 - B. 50% of the cases become seropositive
 - C. 80% of the cases are positive in the 3rd week of the infection
 - D. 30% of the cases are not serosensitive

2. Pili associated with pyelonephritis is found in Escherichia coli strains that cause: -
 - A. Gastrointestinal Infections
 - B. Urinary tract infections
 - C. Pyogenic infections
 - D. Neonatal meningitis

3. Scarlet fever is caused by: -
 - A. Streptococcus pneumoniae
 - B. Streptococcus pyogenes
 - C. Streptococcus agalactiae
 - D. Streptococcus faecalis

4. An agent most likely to cause meningitis after a basal skull fracture
 - A. Streptococcus agalactiae
 - B. Streptococcus pneumoniae
 - C. Neisseria meningitidis
 - D. Staphylococcus aureus

5. A gram-positive, catalase negative and esculin-positive coccus that commonly causes urinary tract

infection is: -

- A. *Staphylococcus saprophyticus*
 - B. *Enterococcus faecium*
 - C. *Escherichia coli*
 - D. *Streptococcus agalactiae*
6. If the venipuncture site is inadequately disinfected, blood cultures are most often contaminated with: -
- A. *Streptococcus pyogenes*
 - B. *Escherichia coli*
 - C. *Staphylococcus epidermidis*
 - D. *Pseudomonas aeruginosa*
7. A characteristic of *Neisseria meningitidis* but not *Neisseria gonorrhoeae* is: -
- A. Ferments glucose
 - B. Contains a polysaccharide capsule
 - C. Is oxidase positive
 - D. Most isolates show resistance to penicillin
8. The microbes associated with food poisoning include: -
- A. *Staphylococcus aureus*, *Campylobacter jejuni*, *Vibrio cholerae*
 - B. *Streptococcus pyogenes*, *Klebsiella pneumoniae*, *Staphylococcus epidermidis*
 - C. *Clostridium welchi*, *Salmonella typhimurium*, *Pseudomonas aeruginosa*,
 - D. *Staphylococcus aureus*, *Salmonella typhimurium*, *Campylobacter jejuni*
9. The microorganism that causes a disease characterized by the catarrhal, paroxysmal and convalescent stages is: -
- A. *Bordetella pertussis*
 - B. *Corynebacterium diphtheria*
 - C. *Mycobacterium tuberculosis*
 - D. *Streptococcus pyogenes*
10. The causative agent of chancroid, one of the most common sexually transmitted disease and is characterized by painful lesions and genital ulcers is:
- A. *Neisseria gonorrhoeae*
 - B. *Haemophilus haemolyticus*
 - C. *Haemophilus ducreyi*
 - D. *Neisseria meningitidis*
11. One of the following metabolic properties differentiates the pink-colored colonies of *Escherichia coli* from the colorless *Salmonella* spp on MacConkey's agar: -
- A. Urease production
 - B. Hemolytic activity
 - C. Lactose fermentation
 - D. Hydrogen sulfide production
12. Enteroinvasive *E. coli* (EIEC) is predominantly found in developing countries infecting children and travelers. One of the following infections is similar to EIEC infection: -
- A. Bacillary dysentery
 - B. Shigellosis
 - C. Typhoid
 - D. Enteric fever
13. Etiological agents presenting themselves as "spaghetti and meatballs" under the microscope cause: -

- A. Tinea nigra
 - B. Black piedra
 - C. White piedra
 - D. Pityriasis
14. Aspergillosis is recognized in tissue by the presence of: -
- A. Metachromatic granules
 - B. Pseudohyphae
 - C. Septate hyphae
 - D. Budding cells
15. 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*
16. The fungi that is most likely to be found within reticuloendothelial cells is: -
- A. *Histoplasma capsulatum*
 - B. *Sporothrix schenckii*
 - C. *Cryptococcus neoformans*
 - D. *Candida albicans*
17. 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
18. An 8-year-old boy develops a circular dry, scaly, and pruritic lesion on his leg. What is the diagnostic significance of observing branching, septate, nonpigmented hyphae in a potassium hydroxide/calcofluor white preparation of a scraping from this skin lesion?
- A. Chromomycosis
 - B. Dermatophytosis
 - C. Phaeohyphomycosis
 - D. Sporotrichosis
19. The correct statement regarding the epidemiology of candidiasis is: -
- A. Patients receiving bone marrow transplants are not at risk for systemic candidiasis.
 - B. Patients with impaired or low numbers of neutrophils and monocytes are not at risk for systemic candidiasis.
 - C. Patients with any form of diabetes have enhanced resistance to candidiasis.
 - D. Patients with AIDS frequently develop mucocutaneous candidiasis, such as thrush.
20. A 28-year-old female sex worker from western Kenya complained of headaches, dizziness,

and occasional episodes of “spacing out” during the past 2 weeks. A lumbar puncture revealed reduced sugar, elevated protein, and 450 mononuclear leukocytes per milliliter. She was seropositive for HIV. Her history is compatible with fungal meningitis due to *Cryptococcus neoformans*, *Coccidioides posadasii*, or a species of *Candida*. The correct confirmatory test is: -

- A. Meningitis due to *Coccidioides posadasii* would be confirmed by a positive test of the CSF for cryptococcal capsular antigen.
- B. Meningitis due to *Cryptococcus neoformans* would be confirmed by a positive test of the CSF for complement fixation antibodies to coccidioidin.
- C. Meningitis due to a species of *Candida* would be confirmed by the microscopic observation of oval yeast cells and pseudohyphae in the CSF.
- D. Meningitis due to *Coccidioides posadasii* would be confirmed by a positive skin test to coccidioidin

SECTION II: SHORT ANSWER QUESTIONS (SAQs) (30 MARKS)

1. Describe the clinical symptoms and treatment for Tuberculosis. (5 marks)
2. Describe the principle, purpose and expected outcomes of the following bacterial identification tests: (5 marks)
 - a) Urease test
 - b) Citrate utilization test
 - c) Triple sugar iron test
3. Describe the pathogenesis of: (5 marks)
 - a) Diphtheria toxin
 - b) Tetanus toxin
 - c) Cholera toxin
 - d) Botulinum toxin
 - e) Typhoid toxin
4. Enumerate five opportunistic fungal infections along with their etiological agents. (5 marks)
5. Describe the pathogenesis of *Histoplasma capsulatum*. (5 marks)
6. Explain briefly the pathogenesis of cryptococcosis. (5 marks)

SECTION III: LONG ANSWER QUESTIONS (LAQs) (20 MARKS)

1. Write short notes on:
 - a) Virulence factors associated with *Pseudomonas aeruginosa* bed sore infection. (7 marks)
 - b) Primary, secondary and tertiary Syphilis. (8 marks)
 - c) Pertussis pathogenesis and prevention. (5 marks)

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