



UNIVERSITI KUALA LUMPUR  
INSTITUTE OF MEDICAL SCIENCE TECHNOLOGY

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FINAL EXAMINATION  
OCTOBER 2025 SEMESTER

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COURSE CODE : HDD10603  
COURSE TITLE : BASIC MICROBIOLOGY  
PROGRAMME NAME : DIPLOMA OF MEDICAL LABORATORY TECHNOLOGY  
DATE : 26 JANUARY 2026  
TIME : 2:00PM - 5:00PM  
DURATION : 3 HOURS



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INSTRUCTIONS TO CANDIDATES

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1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Section A consist 25 MCQ or EMQ questions. Answer ALL questions.
5. Section B consist of four questions. Answer THREE (3) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Please answer MCQ/EMQ questions using OMR sheet.  *Tick if applicable*
9. Refer to the attached Formula/ Appendies.  *Tick if applicable*

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THERE ARE 11 PAGES OF QUESTIONS INCLUDING THIS PAGE

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## SECTION A (Total: 25 marks)

Answer ALL questions.

Please use the objective answer sheet provided.

1. Acid-fast staining is mainly used for \_\_\_\_\_.
  - A. Gram-negative bacteria
  - B. spirochetes
  - C. Gram-positive bacteria
  - D. *Mycobacteria* spp.
  
2. Antibiotics are effective against \_\_\_\_\_.
  - A. viruses
  - B. parasites
  - C. fungi
  - D. bacteria
  
3. The mordant used in Gram's staining is \_\_\_\_\_.
  - A. safranin
  - B. Gram's iodine
  - C. alcohol
  - D. crystal violet
  
4. The thread-like structures of fungi are called \_\_\_\_\_.
  - A. hyphae
  - B. mycelium
  - C. roots
  - D. spores

5. The optimum temperature for most human pathogens is \_\_\_\_\_.
- A. 25°C
  - B. 30°C
  - C. 45°C
  - D. 37°C
6. Autoclave works by using \_\_\_\_\_.
- A. radiation
  - B. moist heat
  - C. dry heat
  - D. filtration
7. Which microscope is used to see viruses?
- A. Phase contrast microscope
  - B. Light microscope
  - C. Dark field microscope
  - D. Electron microscope
8. Opportunistic infections occur when \_\_\_\_\_.
- A. bacteria are absent
  - B. host immunity is strong
  - C. vaccination are administered
  - D. host immunity is weak

9. Which stain is used as a counterstain in acid-fast staining?
- A. Iodine
  - B. Methylene blue
  - C. Crystal violet
  - D. Malachite green
10. A selective medium allows \_\_\_\_\_.
- A. killing of bacteria
  - B. growth of all bacteria
  - C. growth of fungal only
  - D. growth of specific bacteria
11. Enrichment media are used to \_\_\_\_\_.
- A. stain bacteria
  - B. enhance growth of desired bacteria
  - C. preserve bacterial cultures
  - D. suppress all bacteria
12. Microbes used in bioremediation help to \_\_\_\_\_.
- A. clean environmental pollutants
  - B. kill plants
  - C. increase toxin
  - D. cause pollution

13. Simple staining helps to study bacterial \_\_\_\_\_.
- A. antibiotic resistance
  - B. genetic material
  - C. metabolism
  - D. shape and arrangement
14. The study of fungi is called \_\_\_\_\_.
- A. parasitology
  - B. virology
  - C. bacteriology
  - D. mycology
15. The cell wall of bacteria is mainly made of \_\_\_\_\_.
- A. chitin
  - B. lipids
  - C. cellulose
  - D. peptidoglycan
16. The main purpose of staining in microscopy is to \_\_\_\_\_.
- A. increase the contrast
  - B. propagate the cells
  - C. count the cells
  - D. preserve the bacteria

17. Filtration is best used for sterilizing \_\_\_\_\_.
- A. culture media
  - B. glassware
  - C. metal instruments
  - D. heat-sensitive liquids
18. Dry heat sterilization is done using \_\_\_\_\_.
- A. waterbath
  - B. refrigerators
  - C. incinerators
  - D. autoclave
19. Which staining technique differentiates bacteria based on cell wall?
- A. Gram stain
  - B. Capsule stain
  - C. Acid fast stain
  - D. Simple stain
20. Gram-positive bacteria appear \_\_\_\_\_ after Gram staining.
- A. purple
  - B. pink
  - C. green
  - D. red

21. Which of the following bacteria is a common normal flora of the human intestine?
- A. *Staphylococcus aureus*
  - B. *Vibrio cholerae*
  - C. *Escherichia coli*
  - D. *Salmonella typhi*
22. An example of a zoonotic disease is \_\_\_\_\_.
- A. typhoid
  - B. cholera
  - C. measles
  - D. rabies
23. Which virus causes AIDS?
- A. HIV
  - B. Coronavirus
  - C. Herpes virus
  - D. HBV
24. The main component of bacterial cell wall is \_\_\_\_\_.
- A. cellulose
  - B. peptidoglycan
  - C. lipopolysaccharide
  - D. chitin

25. Nitrogen-fixing bacteria convert nitrogen into \_\_\_\_\_.
- A. ammonia
  - B. methane
  - C. carbon dioxide
  - D. oxygen

## SECTION B (Total: 75 marks)

Answer THREE (3) questions only.

Please use the answer booklet provided.

**Question 1**

A microbiology student has been tasked with cultivating *Escherichia coli* (*E. coli*) in the laboratory to study its growth under different environmental conditions. The student is asked to describe the microbial growth process and the key techniques to maintain a proper culture environment.

- i. Describe the different phases of microbial growth. (8 marks)
  
- ii. List five environmental factors that influence the growth of *E. coli*. (7 marks)
  
- iii. Discuss the difference between selective and differential media in microbiological culture. (10 marks)

**Question 2**

Control of microorganisms is essential in order to prevent the transmission of diseases and infection, stop decomposition and spoilage, and prevent unwanted microbial contamination.

- i. Define the terms sterilization and disinfection.  
(5 marks)
- ii. Describe five factors affecting microbial control.  
(10 marks)
- iii. List down five chemical methods for microbial control.  
(10 marks)

**Question 3**

Fungi play a vital role in both natural ecosystems and human life.

- i. Define fungi and describe their general characteristics.  
(10 marks)
- ii. List two common agar media used for fungal culture.  
(4 marks)
- iii. Explain the process of fungal diagnosis in the clinical laboratory.  
(11 marks)

**Question 4**

Answers the questions.

- i. Name five main groups of microorganisms.

(5 marks)

- ii. Describe applications of microorganisms in various fields.

(20 marks)

**END OF EXAMINATION PAPER**



