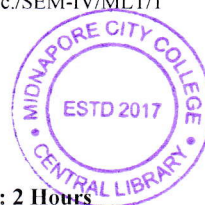


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M.Sc. Semester- IV Examination, 2025
MEDICAL LABORATORY TECHNOLOGY
PAPER: MLT 403B
(DIAGNOSTICS AND APPLIED MICROBIOLOGY)

Full Marks: 40

Time: 2 Hours



The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

Answer any **FOUR** questions:**2×4=8**

1. What is meant by pocket outbreak?
2. What are the major risk factors contributing to hospital-acquired infections in ICU settings?
3. Explain the role of coliform bacteria as indicators of water contamination.
4. What are the sources and types of microbial contamination in milk and dairy products?
5. Write the principle of PCR and its role in the detection of infectious agents.
6. What are the basic steps involved in recombinant DNA technology?

GROUP-B

Answer any **FOUR** questions:**4×4=16**

7. Explain the epidemiology of hospital-acquired infections. Mention two key control measures used in hospitals. 2+2
8. What are the stages of microbial biofilm formation. Write one method for biofilm control. 3+1
9. Discuss about the diagnostic utility of biosafety cabinet in a BSL-2 lab?
10. Discuss the role of genetically modified microorganisms in environmental and public health applications.
11. What is recombinant DNA technology. Mention two applications in microbiology. 2+2
12. Discuss the impact of invasive medical devices on nosocomial infection rates.

GROUP-C

Answer any **TWO** questions:**8×2=16**

13. What are the advantages of using a live recombinant viral vaccine over killed and subunit vaccines. Write the medical importance of bacterial endospore. 5+3
14. Discuss the role of molecular and serological diagnostic methods in the detection of viral infections such as HIV and influenza. 4+4

(P.T.O.)

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15. Discuss Real-time PCR in detail, including principle, chemistry (SYBR Green/TaqMan), advantages, and limitations. 2+2+2+2
 16. Describe the causative agents and toxins of food-borne diseases. Explain their pathogenesis briefly. Outline the preventive measures. 4+2+2

