

2025

M.Sc. 1st Semester Examination

**MEDICAL LABORATORY
TECHNOLOGY**

Paper : MLTE405A0

[Advanced Medical Laboratory Techniques]

Full Marks : 50

Time : Two Hours

*The figures in the 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 : $2 \times 4 = 8$

1. Define numerical aperture (NA) of a microscopy.
2. What is the purpose of loading dye in gel electrophoresis?
3. What is Beer-Lambert's law?
4. What is thermal cycler?
5. What is zymography?
6. What is sedimentation coefficient (Svedberg unit)?

P.T.O.

(2)

Group - B

Answer any *four* questions : $4 \times 4 = 16$

7. Write the principle and applications of sonication. 2+2
8. Discuss the role of CBNAAT in TB diagnosis.
9. Who invented Electron Microscope? Differentiate between TEM and SEM. 1+3
10. Briefly describe the emulsion PCR in next generation sequencing.
11. Write the function of SDS, β -mercaptoethanol, TEMED and APS in PAGE.
12. What is the full form of RPM and RCF in centrifugation? Differentiate between RCF and RPM? 1+3

Group - C

Answer any *two* questions : $8 \times 2 = 16$

13. What is DNA sequencing? Which enzyme is utilized in the Maxam-Gilbert method to label the 3' end of DNA with ^{32}P ? Describe the process of Northern blotting. 2+1+5
14. What are the components of an auto-analyzer? Mention their functions. Write about different types of ELISA. 2+2+4
15. Why are mobile phase gradients used in HPLC? Briefly discuss different types of detectors used in HPLC. 3+5

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16. Why is TaqMan RT-PCR used commonly for molecular diagnostics? Compare between primer and probe used in different PCR methods.

Internal Assessment : 10 marks
