

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 :

2×4=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)?



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Group - B

Answer any four questions :

4×4=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 : 8×2=16

13. What is DNA sequencing? Which enzyme is utilized in the Maxam-Gilbert method to label the 3' end of DNA with 32P? 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

