

2025

M.Sc. 1st Semester Examination

MICROBIOLOGY

Paper : MCBE405A1

(Biosafety and Instrumentation)

Full Marks : 25

Time : One Hour

*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 *two* questions : $2 \times 2 = 4$

1. State the disadvantages of reciprocating pump in HPLC.
2. What is the K-factor in centrifugation?
3. Define numerical aperture of microscope. State the function of Iris diaphragm. $1+1$
4. What is the difference between FESEM and SEM?

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. State the function of dichroic mirror and barrier filter in fluorescence microscope? Name two DNA binding fluorescent stain. $2+2$

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6. Write short note on Ionization chamber.
7. Write the characteristics of radioactive tracer used for molecular imaging. Mention the disadvantages of Scintillation Counter. 1+3
8. Write the principle and application of agarose gel electrophoresis. 2+2

Group - C

Answer any *one* question : 8×1=8

9. Write the process of sample preparation for Scanning Electron Microscopy. What is charge-up phenomenon in SEM? Write the characters of ideal pump system in HPLC. 3+2+3
10. Name the factors that can affect R_f value of chromatography. Compare different types of detectors used in gas chromatography. Write the function of dark field condenser in Dark Field Microscope. 2+4+2

Internal Assessment : 5 marks
