

U.G. 2nd Semester Examination - 2021

MICROBIOLOGY

[HONOURS]

Course Code : MB-H-CC-L-04

(Instrumentation and Biotechniques)

Full Marks : 20

Time : 1 Hour

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all the questions.

1. Answer any **five** of the following: 1×5=5
- i) What is TLC?
 - ii) What is chromophore?
 - iii) What is the function of TEMED in PAGE?
 - iv) Mention the most common application of turbidimetry in basic Microbiology lab.
 - v) What is void volume?
 - vi) What is R_f value?
 - vii) What is sedimentation coefficient?
 - viii) What do you mean by native gel?

2. Write notes any **one** of the following: 5×1=5

- i) PAGE and agarose gel electrophoresis
- ii) Density gradient centrifugation and its application
- iii) Phase Contrast Microscopy and its application

3. Answer any **one** of the following: 10×1=10

- i) “Too high or too low concentrations of solute may bring deviations in spectroscopic analysis of biomolecules”- Justify the statement with reasons. A solution containing 10^{-5} M ATP has a transmission 0.702 (70.2%) at 260 nm in 1 cm cuvette. Calculate absorbance of the solution in a 3 cm cuvette. What is the relation between RPM and RCF? Why is it important to ensure equal loading in opposite tubes during centrifugation? 3+3+2+2
- ii) What is optical sectioning? Discuss how it can be improved in fluorescence microscopy. Why are a high vacuum and very thin sections required in TEM? In what ways TEM differ from SEM? 2+3+2+3

iii) Write short notes on: $2\frac{1}{2}\times 4$

- a) Isoelectric focusing
 - b) Lambert Beer's law
 - c) Numerical aperture
 - d) Fluorescence microscopy
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