

M.Sc. 1st Semester Examination, 2024

MICROBIOLOGY

(Biophysics & Instrumentation)

PAPER — MCB-105

Full Marks : 25

Time : 1 hour

Answer all questions

The figures in the right hand margin indicate marks

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

GROUP — A

Answer any **two** questions from the following :
2 × 2

1. State the characteristics of hydrogen bond.
2. Write the factors that affect successful rate zonal centrifugation.

(Turn Over)

(2)

3. Name the radioisotopes used to label the protein in cell culture.
4. Define Void volume and Elution volume in column chromatography.

GROUP – B

Answer any **two** questions from the following :

4 × 2

5. Why water is considered as an excellent solvent for polar molecule ? State the alternation of the quantity of hydrogen bonds during its liquid and solid state. 2 + 2
6. Write short note on (any *one*) :
 - (a) Ultracentrifuge
 - (b) Geiger Muller Counter
7. Write the process of sample preparation for Fluorescent Microscopy.

(3)

8. Mention the advantages and disadvantages of Scintillation Counter.

GROUP – C

Answer any **one** question from the following : 8 × 1

9. What is the working principle of phase contrast microscope ? What is phase change in phase contrast microscope ? A centrifuge rotor has a radius of 10 cm. If a sample experiences a relative centrifugal force (RCF) of 15,000 g, what is the rotational speed in RPM ? 3 + 2 + 3
10. Mention different types of rotors used for centrifugation. Briefly describe each type. Give example of two weak cation exchange resins and two strong anion exchange resins. 2 + 4 + 2

[Internal Assessment – 5 Marks]

