

MASTER OF SCIENCE (MICROBIOLOGY) (CBCS - 2018 COURSE)

M.Sc. (Microbiology) Sem-II : WINTER :- 2021

SUBJECT: ANALYTICAL TECHNIQUES

Day : Thursday

Date 3/2/2022

W-18591-2021

Time : 02:00 PM-05:00 PM

Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat diagrams **WHEREVER** necessary.

- Q.1** Explain the principle of Centrifugation technique. Discuss application of centrifugation in (15)
- i) Calculating molecular weight
  - ii) Differential separation of cell homogenate

**OR**

Explain UV-visible spectroscopy with reference to:

- i) Principle and instrumentation
- ii) Application in study of biomolecules

- Q.2** a) Describe the instrument for gel electrophoresis. Elaborate on matrices used for preparing gels. (08)
- b) Write the principle for chromatographic separation method. Explain schematically gel exclusion chromatography and its applications. (07)

**Q.3** Answer **ANY THREE** of the following: (15)

- a) Describe the design of Gieger - Muller counter. What do you think will happen to counting efficiency of G.M. counter as the count rises? Why?
- b) Define :
  - i) RPM
  - ii) RCFWhat rpm can be set for a rotor with maximum radius 10.2 cm to attain centrifugal force  $6000 \times g$ ?
- c) Explain with a flowsheet -Types of chromatographic systems.
- d) Describe the post electrophoretic methods used to visualize the bands.
- e) What is a chromatogram? Draw and explain chromatogram showing:
  - i) Incomplete separation
  - ii) Broadening of peak

**Q.4** Write short note on **ANY THREE** of the following: (15)

- a) Detectors
- b) Radioactive decay
- c) Instrumentation for Fluorescence Spectroscopy
- d) Ion exchange chromatography
- e) Atomic spectroscopy

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