

Exam. Code : 210004

Subject Code : 4233

M.Sc. Botany 4th Semester

BOTC-624 : ANALYTICAL TECHNIQUES

Time Allowed—3 Hours]

[Maximum Marks—50

Note :— Attempt **all** sections.

(1) **Section A** : Attempt **all** parts. Answer to any part should not exceed **4** lines.

(8×1=8)

(2) **Section B** : Attempt any **SEVEN** questions. Answer to any question should not exceed **2** pages.

(7×3=21)

(3) **Section C** : Attempt any **THREE** questions. Answer to any question should not exceed **4** pages.

(3×7=21)

Support your answer with neat and labelled diagram wherever necessary.

SECTION—A

1. Short answer type questions :

- (i) Name two fixatives and stains that are generally used for fixing pollen mother cells and staining.
- (ii) Briefly give two uses of Phase Contrast Microscopy.
- (iii) Name two techniques that can separate proteins on the basis of charge only.

- (iv) Give full form of PAGE. For which purpose is it used ?
- (v) Define Beer-Lambert Law.
- (vi) Define Sedimentation Coefficient. Name the factors on which it depends.
- (vii) Which method will you use for determining three dimensional structure of a protein having molecular weight of 50,000 daltons ?
- (viii) Define Cot curves.

SECTION—B

- 2. Describe briefly uses of Atomic Absorption Spectroscopy.
- 3. Give a concise account of working of Fluorescence Microscopy.
- 4. Discuss the principle underlying Density Gradient Centrifuge. For which purpose is it used ?
- 5. Write a short note on electro focussing.
- 6. Discuss working of High Pressure Liquid Chromatography.
- 7. Enlist important hydrodynamic methods used for analysing bio polymeric structures.
- 8. Describe briefly X-ray diffraction and its uses.
- 9. Write a short note on western blotting techniques.
- 10. What is PCR ? How is it performed ?

SECTION—C

11. Write a detailed account on working and applications of Scanning Electron Microscopy.
12. Discuss in detail working and applications of Affinity Chromatography.
13. Describe principle and applicability of ESR Spectroscopy.
14. Describe Sanger's dideoxy method of chain termination for gene sequencing.
15. Define Electrophoresis. How will you prepare Agarose gel for separating DNA molecules ? Enlist the factors on which DNA migration depends during electrophoresis.
16. Bring out a detailed comparison between principle and working of Atomic Absorption and Plasma Emission Spectroscopy.