Seat No. : _____

AL-135

April-2025

B.Sc., Sem.-IV

DSC-C-BT-242-T : Biotechnology (Major)

(Bio-analytical Tools)

Time : 2:00 Hours] **[Max. Marks : 50**

1. What is microscopy ? Compare and contrast in detail between bright field and dark field microscopy highlighting their principle and application. **10**

OR

1. (A) Write the principle, working and application of centrifugation. **5**

   (B) Differentiate between swinging bucket, vertical and fixed angle rotors. **5**

2. Describe in detail principle, instrumentation and applications of UV-Visible spectroscopy. **10**

OR

2. (A) Write the applications of radioactive tracers in biology. **5**

   (B) Explain detection and measurement of radioactivity using GM counter with illustrations. **5**

3. Explain the principle of chromatography. Discuss affinity and HPLC chromatography with suitable diagram. **10**

OR

3. (A) Write the principle, construction and application of HPLC. **5**

   (B) Write a note on ion exchange chromatography. **5**

4. What is electrophoretic mobility ? Write the principle, procedure and application of electrophoresis with diagram. **10**

OR

4. (A) Write a note on the types of gel electrophoresis. **5**

   (B) Differentiate between NATIVE PAGE and SDS-PAGE. **5**

5. Answer the following : (any **ten** out of **twelve**) **10**

(1) What is RCM and RCF ?

(2) Explain resolving power.

(3) State Stoke's law.

(4) Write the advantage of phase contrast microscope.

(5) Write an application of 2D-PAGE.

(6) Define Isoelectric Focusing.

(7) What percentage of gel is used in case of Agarose gel electrophoresis for separating DNA ?

(8) What is Beer-Lambert's Law ?

(9) Define NMR.

(10) Name few types of adsorbents used in chromatography.

(11) Give the formula of retention factor.

(12) What is partition chromatography ?
