

M.Sc. (Envi.) Semester - 2 (CBCS) Examination**March/April - 2025****Instrumentation and Analytical Technique (Core)****Time: 02:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Q.1 Answer the following (any seven) (14)**
1. Explain buffer and its importance in brief.
 2. Write about the use of electrical conductivity.
 3. Define Beer-Lambert law.
 4. Describe the application of AAS.
 5. Enlist the type of mobile phases used in gas chromatography.
 6. Define the stationary phase in affinity chromatography.
 7. Describe the function of TEMED.
 8. Application of loading buffer in electrophoresis.
- Q.2 Answer the following (any two) (14)**
1. Explain the difference between scanning and transmission electron microscopy.
 2. Write a note on fluorescence microscopy.
 3. Write short note on staining and fixation.
- Q.3 Answer the following (any two) (14)**
1. Write a principle and application of paper chromatography.
 2. Write short note on ion-exchange chromatography.
 3. Explain principle and application affinity chromatography.
- Q.4 Answer the following (any two) (14)**
1. Describe the basic principle and application of UV-vis spectroscopy.
 2. Write working principle and application infrared spectroscopy.
 3. Explain flame photometry in detail
- Q.5 Answer the following (any two) (14)**
1. Write note on ultracentrifugation.
 2. Explain the agarose gel electrophoresis in detail.
 3. Explain SDS-PAGE in detail.
