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**MEVE-018**

**M. SC. (ENVIRONMENTAL  
SCIENCE) (MSCENV)**

**Term-End Examination**

**June, 2026**

**MEVE-018 : INSTRUMENTATION TECHNIQUES  
FOR ENVIRONMENTAL MONITORING**

*Time : 3 Hours*

*Maximum Marks : 100*

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**Note :** Answer any **ten** questions. Each question carries 10 marks.

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1. What is an ion exchange resin ? Explain in detail.
2. What is the working principle of Gas Liquid Chromatography (GLC) ? Explain.
3. What are monochromators ? Describe the functioning of a grating monochromator.
4. What is the difference between chemiluminescence and photoluminescence ? Explain.

5. What is Supercritical Fluid chromatography ?  
How does it differ from traditional Gas Liquid chromatography ?
6. Explain the working principle of a Hollow Cathode Lamp (HCL) used in FAAS. What is the significance of Flame Atomic Absorption spectrum ?
7. What are the similarities and differences between Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) ? Discuss their applications.
8. Discuss the applications of capillary electrophoresis in the analysis of Environmental Pollutants.
9. Write short notes on the following :
  - (a) Immunoassay
  - (b) Stable Isotope Labeling
10. Define restriction endonuclease. Explain with suitable examples.
11. Explain the blotting method used to detect protein in a given sample.

12. What is the working principle of conductometric Biosensors ? Explain their environmental applications with suitable examples.
13. Explain the mechanism of protein-based nanopore sequencing. How does the change in electric current correlate with the sequencing of DNA ?
14. What role does the flame play in Flame Atomic Emission Spectrometry ? How does the process of excitation and emission occur ? Explain.

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