

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

Term-End Examination

December, 2025

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

Time : 3 Hours

Maximum Marks : 100

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

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1. Describe various methods used in soil sampling. 10
 2. Explain the following : 5+5
 - (a) Principle of Flame Atomic Emission Spectrometry
 - (b) Principle of UV-Vis spectrophotometry
 3. What is the advantage of GLC over column chromatography ? Explain. 10

4. What are the advantages of conductometric biosensors ? Explain. 10
5. Describe the various applications of immunoassay in Environmental Monitoring. 10
6. Explain the following with suitable examples : 5+5
 - (a) Biosensors
 - (b) Microarrays
7. Describe the steps involved in Southern blotting (DNA) techniques. 10
8. What is the difference between Protein sequencing and Nucleic acid sequencing ? Explain. 10
9. What are the characteristics of NMR spectrum ? Explain the significance of NMR in structure elucidation. 10
10. What is chromatography ? Write any *two* differences between gas, liquid and super-critical fluid chromatography. 10

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11. Explain the following with suitable examples : 5+5
- (a) Nanowires
 - (b) Immunoassay
12. What are the advantages of capillary electrophoresis over other techniques ? 10
13. What is the principle of phase contrast microscope ? Explain. 10
14. Briefly explain the following : 5+5
- (a) Advantages of HPLC over GLC
 - (b) Advantages of UPLC over HPLC

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