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MEVE–018

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.*

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

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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