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MEVE-018

M. Sc. (ENVIRONMENTAL SCIENCE)

(MSCENV)

Term-End Examination

June, 2023

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

Time : 3 Hours

Maximum Marks : 100

Note : (i) Answer any **ten** questions.

(ii) Each question carries equal marks.

1. What is hybrid nanopore ? What advantages they have over other nanopore sequencing methods ?
2. Explain the following with suitable examples :
 - (a) Biosensors
 - (b) Flow cytometry
3. What is capillary electrophoresis ? Describe its applications in the analysis of environmental pollutants.
4. What are different methods employed in air sampling ? Explain in detail.
5. Explain the origin of characteristic lines in the X-ray spectrum.

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6. What is meant by resonance in magnetic resonance ? What are the characteristics of NMR spectrum ?
7. Describe the steps involved in PCR and explain the advantage of q-PCR over other methods.
8. What are microarrays ? Explain their applications.
9. What are peptide nano-electrodes ? What is their principle of working ?
10. What is the principle of Light Microscopy ? Explain the function of compound microscope.
11. Differentiate between the following :
 - (i) SEM and TEM
 - (ii) Descending and Ascending paper chromatography
12. Define the following :
 - (a) Spin-spin coupling
 - (b) Chemical shift
 - (c) Atomic scattering factor
 - (d) DNA profiling
 - (e) Array hybridization
13. What are immunoassay techniques ? Explain the working of enzyme immunoassays.
14. What are the different components of HPLC ? Explain its applications.