Time: 2.30 Hrs **[Total Marks: 60]**

N.B.: 1) All questions are compulsory.
  2) All questions carry equal marks.
  3) Draw neat & labelled diagrams wherever necessary.

Q1. Attempt **any two** questions from the following 12
  A) Explain sampling procedure of surface and groundwater.
  B) Describe the sampling methods for the collection of gaseous and particulate samples.
  C) Explain the concepts of environmental monitoring and give significance.

Q2. Attempt **any two** questions from the following 12
  A) Explain the importance of spectrophotometric methods for measuring common air pollutants.
  B) Describe the working of HPTLC and write key features.
  C) Describe the theory, principle, and environmental applications of Flame photometry.

Q3. Attempt **any two** questions from the following 12
  A) Write an introduction, principle, and applications of X-ray Fluorescence.
  B) Explain the Chemiluminescence method and fluorescent analyser for SO_2.
  C) Give the principle and applications of X-ray Diffraction.

Q4. Attempt **any two** questions from the following 12
  A) Define primary and secondary data and explain the methods of collection of primary and secondary data.
  B) Give an introduction to probability and explain the types of events.
  C) Calculate the standard deviation for the following dataset.

Class Interval	Frequency
0.0-0.5	4
5.0-10.0	6
10.0-15.0	8
15.0-20.0	5
20.0-25.0	7
25.0-30.0	3

Q5. Attempt **any four** questions from the following 12
  A) A sampling of wastewater and sample preservation
  B) Thermogravimetry
  C) Pearson's Coefficient
  D) Scanning electron microscopy (SEM)
  E) Flow injection analyzer

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16733