

M.Sc. Examination, 2016
Semester – I
Environmental Science
Paper – MEC-14
(Techniques in Environmental Science)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin.
Answer question No. 1 and any four from the rest

1. Write short note on **any four** of the following : 4×2=8
 - a) Titrimetry
 - b) Precision & Accuracy
 - c) Gel
 - d) Soxhlet apparatus
 - e) Differentiate between Reverse Phase & Normal Phase
 - f) GF-AAS
2.
 - a) What is Monitoring? 1+3+4=8
 - b) What are the objectives of water quality monitoring?
 - c) What are the different types of monitoring programme you have studied & mention the purpose for which they are performed?
3.
 - a) What is the gravimetric analysis (GA)? 1+2+2+2+1=8
 - b) What are advantages and disadvantages of gravimetric analysis? How can the problems associated with GA be overcome?
 - c) Define stoichiometric end point.
4.
 - a) What is the basic principle of Chromatography? 2+3+3=8
 - b) Explain briefly how the thin layer Chromatography will be helpful in separating the individual components from a non-volatile mixture?
 - c) Discuss the principle of absorption spectroscopy.
5.
 - a) Mention the use/utility of 2-D gel electrophoresis in separating proteins of similar mass. 5+3=8
 - b) An enzyme examined by means of gel filtration in aqueous buffer at pH 7.0 had an apparent molecular weight of 160,000 Dalton. When examined by gel electrophoresis in SDS solution, a single band of apparent molecular weight of 40,000 Dalton appeared. Explain these findings.
6.
 - a) Why is HNO₃ preferred for sample digestion? 3+2.5+2.5=8
 - b) Draw a thematic protocol for extraction and clean up for—
 - i) Polycyclic aromatic hydrocarbons
 - ii) Chlorinated pesticides in soil samples
7.
 - a) What is the principle of Flame Photometer (FP)? 2+4+2=8
 - b) How is the separation in FP different from AAS?
 - c) What is cold-vapour AAS?