

M.Sc. (Part—I) Semester—II (CBCS Scheme) Examination
CHEMISTRY (Old) (Upto Winter-2018)
(Optical Methods and Environmental Chemistry)
Paper—VIII

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory and carry equal marks.
(2) Use of calculator is permitted.

UNIT—I

1. (a) How pKa value of an indicator can be determined with the help of spectrophotometer ?
5
- (b) State and explain the following terms :
(i) Ringbom's plot
(ii) Spectrophotometric titration. 2×3=6
- (c) If a solution of a benzonitrile in water, with concentration of 1×10^{-4} molar, is examined at wavelength of 224 nm, the absorbance is determined to be 1.30. The cell length is 1 cm. What is the molar absorptivity of this absorption band ?
5

OR

- (p) State and explain Lambert-Beer's law and its limitation. 5
(q) Explain construction and working of Abbe's refractometer and its application. 6
(r) Explain turbidimetry and nephelometry with the help of diagram. 5

UNIT—II

2. (a) How AAS is superior over FES ? 5
(b) Explain :
(i) Total consumption burner
(ii) Laminar flow burner
(iii) Lundgradh burner. 3×2=6
- (c) Explain sample preparation and working of AAS. 5

OR

- (p) Give the advantage and disadvantage of total consumption and premix burner. 6
(q) Give the application and limitation of AAS. 5
(r) Compare Flame emission spectrometry with atomic absorption spectrophotometry. 5

UNIT—III

3. (a) Discuss the sources of water pollution. 5
(b) What are the adverse effects of water pollution ? 5
(c) Define alkalinity and hardness. How it can be estimated ? 6

OR

- (p) Discuss the BOD and COD, explain the method of estimation of it. 6
(q) Define water pollution and classification of water pollutant. 5
(r) Write a note on effect of oil pollution. 5

UNIT—IV

4. (a) Write a note on photochemical smog. 5
(b) What are the major sources of water pollution ? 6
(c) Effect of carbon monoxide on living thing. 5

OR

- (p) What is Greenhouse Effect ? Explain. 5
(q) Write a note on :
(i) Acid Rain
(ii) Global Warming. 2×3=6
(r) What is the effect of air pollution on living organism ? 5

UNIT—V

5. (a) What are the effects of modern agrotechnology ? 5
(b) Answer in brief :
(i) How are pesticides classified ?
(ii) What is the effect of pesticide residue on life ? 2×3=6
(c) Write general adverse effect of radioactive pollution. 5

OR

- (p) What are the effects of ionising and non-ionising radiation on human being ? 6
(q) How organic matter plays an important role in the soil ? 5
(r) What is DDT problem ? Explain. 5