M.Sc. (Part—I) Semester—II (CBCS Scheme) Examination
CHEMISTRY (New)
(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 scientific calculator is allowed.

1. (a) Describe principles and applications of fluorimetry. 5
(b) Explain construction and working of double beam spectrophotometer. 5
(c) A dye solution shows absorbance of 0.315. If the concentration and path length are doubled, calculate percentage transmittance. 6

OR

(p) Explain instrumentation in nephelometry. 5
(q) Give principle and applications of polarimetry. 5
(r) Explain how pK of indicator is determined spectrophotometrically. 6

2. (a) Compare AAS with FES. 5
(b) Explain working of hollow cathode lamp. 5
(c) Explain interferences in flame photometry. 6

OR

(p) Give advantages of AAS over FES. 5
(q) Explain construction and working of total consumption burner. 5
(r) Draw schematic diagrams of :
(i) Flame photometer
(ii) Atomic absorption spectrometer. 6

3. (a) Explain principle of D.O. estimation. 5
(b) How do you estimate chlorides in water sample ? Describe in brief. 5
(c) Write short notes on :
(i) Radioactive waste
(ii) Coagulation. 6

OR

(p) Explain SPANDs method for fluoride estimation. 5
(q) Give significance of Biochemical Oxygen demand. 5
(r) Explain how COD is estimated in water sample. Give significance of COD. 6

4. (a) Explain classification of air pollutants. 5

(b) Explain analysis of SO_x in air. 5

(c) Explain ozone depletion and its effects. 6

OR

(p) Write a short note on 'photo-chemical smog'. 5

(q) How H_2S is estimated in ambient air ? 5

(r) Explain :

(i) GHE

(ii) Acid rain. 6

5. (a) Explain role of micronutrients in soil. 5

(b) What is meant by 'pesticide pollution' ? Give its effects. 5

(c) Explain effects of ionizing radiations. 6

OR

(p) Explain residual analysis of pesticides. 5

(q) What is 'agricultural pollution' ? How can it be avoided ? 5

(r) Explain measures to avoid radiation exposure. 6