

AU-316

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

N.B. :— (1) ALL questions are compulsory and carry equal marks.

(2) Use of scientific calculator is permitted.

1. (a) What are photometric titrations ? Explain with suitable example. 5
- (b) Explain the working principle of turbidimetry. 5
- (c) A 10 mL 1 % solution of a dye was diluted to 1L and the absorbance of this solution was found to be 0.216 in 1 cm cell. If molecular weight of dye is 250, calculate its molar extinction coefficient. 6

OR

- (p) Explain the application of polarimetry in determination of rate of inversion of cane sugar. 5
- (q) Draw schematic diagram of double beam spectrophotometer. 5
- (r) What is a ringbom plot ? Explain its applicability. 6
2. (a) Compare atomic absorption with atomic emission spectroscopy. 5
- (b) Discuss construction and advantages of premix burner in AAS. 5
- (c) Explain chemical interferences in FES. How are they removed ? 6

OR

- (p) What is the role of monochromator in AAS ? Can we use tungsten lamp instead of hollow cathode lamp ? 5
- (q) Give environmental applications of AAS. 5
- (r) Draw schematic diagram of flame photometer. Explain its components. 6

3. (a) Explain SPAND method of estimation of fluoride in water sample. 5
- (b) Define COD. How is it estimated ? 5
- (c) Write a short note on 'coagulation and flocculation'. 6

OR

- (p) Define 'hardness of water'. Give its types. How is it removed ? 5
- (q) Explain how dissolved oxygen is estimated in water sample. 5
- (r) How is arsenic content of a water sample estimated ? Explain. 6
4. (a) Explain the method of estimation of NO_x in air. 5
- (b) Define 'green house effect'. Give its causes and consequences. 5
- (c) Explain various sources of air pollution. 6

OR

- (p) Explain the method of estimation of H_2S in air. 5
- (q) What is photochemical smog ? How is it formed ? 5
- (r) Give sources of NH_3 and method of its estimation in air. 6
5. (a) Explain classification of pesticides. 5
- (b) Explain the analysis of DDT in plant residues. 5
- (c) Explain the effect of non-ionizing radiation on life. 6

OR

- (p) Write short note on 'Radiation protection'. 5
- (q) What are micronutrients ? Explain their role in soil. 5
- (r) How do you estimate pH of soil ? Explain it. 6