

**B.Sc. (Part—II) Semester—IV Examination**  
**INDUSTRIAL CHEMISTRY (R/V)**  
**(Material Science and Industrial Pollution)**

Time : Three Hours]

[Maximum Marks : 80

**N.B. :-** (1) Question No. 1 is compulsory and carries 8 marks.

(2) Remaining all questions carry 12 marks each.

(3) Draw diagram wherever necessary.

(4) Use of scientific calculator is allowed.

1. (A) Fill in the blanks :

(i) Thermoplastic polymers become \_\_\_\_\_ on heating.

(ii) Alum is the most popular \_\_\_\_\_ used both in water and waste water treatment.

(iii) Oxides of carbon, sulfur and nitrogen are the examples of \_\_\_\_\_ air pollutant.

(iv) Decibel is the unit for the measurement of \_\_\_\_\_ level. 2

(B) Choose the correct alternatives from the following :

(i) Which of the following is a synthetic polymer ?

(a) Wool

(b) Silk

(c) Teflon

(d) Leather

(ii) Sterilization treatment of water includes removal or killing of \_\_\_\_\_.

(a) Bacteria

(b) Viruses

(c) Fungi

(d) All of these

(iii) Which one of the following is not a constituent of cement ?

(a) Silica

(b) Lime

(c) Alumina

(d) Dolomite

(iv) Ion exchange is used as \_\_\_\_\_ method for water treatment.

(a) Primary

(b) Secondary

(c) Tertiary

(d) All of these 2

(C) Answer in one sentence :

(i) What is degree of Polymerization ?

(ii) Define Air Pollution.

(iii) Define Soft Glass.

(iv) What is Hardness of Water ? 4

**UNIT—I**

2. (A) What are ceramics ? Give the types of ceramics and its applications. 4  
(B) Explain the following types of glass :  
(i) Soda-lime glass  
(ii) Potash-lime glass. 4  
(C) Discuss any two formation processes of ceramics. 4

**OR**

3. (P) Give the raw materials required for manufacture of refractories. 4  
(Q) Draw and explain the manufacture of glass by pot furnace process. 4  
(R) Explain the formation process of ceramics :  
(i) Slip casting  
(ii) Soft mud process. 4

**UNIT—II**

4. (A) Draw and explain manufacture process of cement by wet process. 4  
(B) Explain the procedure for testing the tensile strength of cement. 4  
(C) Discuss the high alumina cement with advantages and disadvantages. 4

**OR**

5. (P) Describe the setting and hardening of cement. 4  
(Q) Discuss the following testing methods of cement :  
(i) Fineness  
(ii) Specific gravity. 4  
(R) Discuss any four additives of cement. 4

**UNIT—III**

6. (A) Discuss Organic and Inorganic Polymer. 4  
(B) Explain the manufacturing of Teflon. 4  
(C) Give the properties and applications of nylon 6:6. 4

**OR**

7. (P) Explain the manufacturing of Polystyrene. 4  
(Q) Give an account of addition and condensation polymerization. 4  
(R) Give the properties and applications of polyethylene. 4

**UNIT—IV**

8. (A) Discuss the following quality parameters of water :
- (i) Acidity
  - (ii) Alkalinity. 4
- (B) Explain water pollution due to paper industry. 4
- (C) Discuss water pollution due to mineral acid. 4

**OR**

9. (P) Explain the following water quality parameters :
- (i) COD
  - (ii) BOD. 6
- (Q) Give any four standard (maximum permissible limits) for drinking water as per WHO. 2
- (R) Discuss water pollution due to Arsenic heavy metal. 4

**UNIT—V**

10. (A) Give an account of coagulation method of waste water treatment. 4
- (B) Discuss preliminary treatment of waste water. 4
- (C) Explain activated sludge process. 4

**OR**

11. (P) Explain chlorination and U.V. irradiation methods of sterilization. 4
- (Q) Give an account of trickling filter. 4
- (R) Discuss adsorption and evaporation methods of water treatment for inorganic chemicals. 4

**UNIT—VI**

12. (A) Draw and explain electrostatic precipitator used in air pollution control. 4
- (B) Discuss any four methods of noise pollution control. 4
- (C) How is Solid Particulate Matter (SPM) determined with the help of high volume sampler ? 4

**OR**

13. (P) Explain the classification of air pollutants. 4
- (Q) Discuss harmful effects of hydrocarbons on human being and plants. 4
- (R) Give an account of absorption method for collection of air samples. 4

