# 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) Word ceramic means _____ .
(ii) In wet process of manufacturing of cement slurry is fed to the kiln at _____ end.
(iii) Long form of D.O. in water quality parameter is _____.
(iv) _____ is a monomer for manufacture of polyvinyl chloride. 2

(B) Choose the appropriate answer from the given alternative in each subquestion :
(i) Colour of cement is mainly due to :
(a) Lime (b) Silica
(c) Alumina (d) Oxide of iron
(ii) Nylon is an :
(a) Amide (b) Peptide
(c) Polyamide (d) Polyester
(iii) Which one of the following in not a primary water treatment method ?
(a) Sedimentation (b) Filtration
(c) Sterilization (d) Ion exchange
(iv) Major ingredient of traditional ceramic is :
(a) Silica (b) Clay
(c) Feldspar (d) All of these 2

(C) Answer the following in **one** sentence each :
(i) Define acidity of a water sample.
(ii) What are polymers ?
(iii) What are primary air pollutants ?
(iv) Define Refractories. 4

### UNIT–I

2. (A) Discuss manufacturing process of soft glass with diagram. 4
(B) Give properties and application of ceramics. 4
(C) Discuss steps involved in manufacturing process of refractories. 4

**OR**

3. (P) Explain properties and applications of fire clay bricks. 4
(Q) Explain types and properties of glass. 4
(R) Discuss manufacturing process of ceramics with diagram. 4

## UNIT–II

4. (A) Explain wet process for manufacture of cement. 6
   (B) Explain tensile strength testing of cement. 6

**OR**

5. (P) Explain setting and hardening of cement with reactions. 6
   (Q) Discuss major engineering problems in manufacturing of cement. 6

## UNIT–III

6. (A) Explain manufacturing process of phenol formaldehyde resin. 4
   (B) Explain classification of polymer on the basis of occurence. 4
   (C) Give properties and applications of polyvinyl chloride. 4

**OR**

7. (P) Explain manufacturing process of polystyrene. 4
   (Q) Give properties and applications of teflon. 4
   (R) Give manufacture and application of nylon-66. 4

## UNIT–IV

8. (A) Discuss sources and effects of Lead (Pb) and Mercury (Hg) as a water pollutant. 4
   (B) Define chemical oxygen demand. How is it determined in laboratory ? 4
   (C) Explain sources and effects of detergents as water pollutants. 4

**OR**

9. (P) Discuss water pollution due to paper industries. 4
   (Q) Define alkalinity. How is it determined in laboratory ? 4
   (R) Explain classification and quality of sources of water. 4

## UNIT–V

10. (A) What is coagulation ? Explain coagulation method for water treatment. 4
    (B) Explain electrolysis for removal of Inorganic pollutants from water. 4
    (C) Explain construction and working of trickling filter with diagram. 4

**OR**

11. (P) Discuss activated sludge method for water treatment. 4
    (Q) Explain sterilization method for water treatment. 4
    (R) How is ion exchange used for water treatment ? Explain. 4

## UNIT–VI

12. (A) Explain construction and working of electrostatic precipator. 4
    (B) What are sources of noise pollution ? Give unit for measurement of noise pollution. 4
    (C) Discuss sources and effects of $CO_x$ as air pollutant. 4

**OR**

13. (P) Discuss sources and effects of $SO_x$ as air pollutants. 4
    (Q) Explain sources of air pollution from thermal power plant. 4
    (R) Discuss greenhouse effect with suitable examples. 4