AU–108

B.Sc. (Part—II) Semester—IV Examination

INDUSTRIAL CHEMISTRY (R/V)

(Material Science and Industrial Pollution)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) Draw well labelled diagrams wherever necessary.
(2) Question No. **1** is compulsory and carries **8** marks.
(3) Remaining **SIX** questions carry **12** marks each.
(4) Use of calculator is allowed.

1. (A) Fill in the blanks :

(i) Secondary air pollutants are derived from _____ pollutants.

(ii) Long form of IS is _____.

(iii) Number of repeating units in a polymer chain is called as _____ of polymerisation.

(iv) In water treatment sedimentation is used to remove _____ particles. 2

(B) Choose correct alternative :

(i) Which of the following is not a class of glass ?

(a) Soda-lime glass (b) Potash-lime glass

(c) Soda-lead glass (d) Potash-lead glass

(ii) CO_x, SO_x and NO_x are :

(a) Primary air pollutants (b) Secondary air pollutants

(c) Tertiary air pollutants (d) None of these

(iii) Which of the following is not a unit for measurement of noise level ?

(a) Decibel (b) Phone

(c) Sones (d) Bar

(iv) For sterilisation water is exposed to :

(a) X-ray radiation (b) Ultraviolet radiation

(c) Infrared radiation (d) All of these 2

(C) Answer in **one sentence** each :

(i) What is TDS of water ?

(ii) Define Biological oxygen demand.

(iii) What is a polymer ?

(iv) What are acid refractories ? 4

UNIT—I

2. (A) Discuss classification of glass. 4

(B) Describe any two methods for fabrication of ceramic ware. 4

(C) What is firing of refractories ? Explain round down drought periodic kilns with diagram. 4

OR

3. (P) Explain manufacturing process of glass by tank furnace. 4

(Q) Discuss raw materials of ceramics. 4

(R) Give an account of preparation, properties and uses of high alumina bricks. 4

UNIT—II

4. (A) Give raw material for manufacturing of cement. Discuss wet process for manufacturing of cement. 4

(B) What do you mean by setting and hardening of cement ? Discuss reactions involved in it. 4

(C) Discuss high alumina cement and its properties. 4

OR

5. (P) Discuss types and properties of cement. 4

(Q) Give brief account of additive for cement. 4

(R) What are chemical and physical requirements for testing of cement. 4

UNIT—III

6. (A) What is polymerisation ? Explain different types of polymerisation processes. 4

(B) Discuss manufacturing of phenol formaldehyde resin. 4

(C) Explain manufacturing of polytetrafluoroethylene (Teflon). 4

OR

7. (P) Explain manufacturing of polyethylene. 4

(Q) Discuss manufacturing of urea formaldehyde resin. 4

(R) Discuss manufacturing process and applications of nylon. 4

UNIT—IV

8. (A) What is chemical oxygen demand ? How is it determined chemically ? 4

(B) Discuss sources of water pollution from sugar industries. 4

(C) Discuss sources of lead (Pb) as a water pollutant. 4

OR

9. (P) Explain natural sources of water and their properties. 4

(Q) What is hardness ? Define and explain its types. 4

(R) Explain sources and effect of Nickel (Ni) as water pollutant. 4

UNIT—V

10. (A) Explain following water treatment methods :

(i) Sedimentation

(ii) Sterilization. 4

(B) Draw and explain trickling filter. 4

(C) Discuss evaporation and precipitation method for water treatment. 4

OR

11. (P) Draw and explain activated sludge process for water treatment. 4

(Q) Explain ion exchange and adsorption for water treatment. 4

(R) What is coagulation ? Explain coagulation method for water treatment. 4

UNIT—VI

12. (A) Discuss harmful effects of air pollutant on human beings and plants. 6

(B) Describe sources and effects of oxides of sulphur and nitrogen as air pollutant. 6

OR

13. (P) Draw and explain electrostatic precipitator. Explain effects of suspended particles as air pollutants. 6

(Q) Explain green house effect. 6