AS–1429

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

INDUSTRIAL CHEMISTRY (R/V)

(Material Science and Industrial Pollution)

Time : Three Hours] [Maximum Marks : 80

Note :— (i) Question No. **1** is compulsory and carries 8 marks.

(ii) Remaining all **SIX** questions carry 12 marks each.

(iii) Use of scientific calculator is allowed.

1. (A) Fill in the blanks :

(i) Sedimentation process for waste water treatment mainly removes _____ particles.

(ii) Polyethylene is formed by _____ polymerization from ethylene.

(iii) Long form of B.O.D. as water quality parameter is _____.

(iv) To manufacture cement by wet process _____ percent water is used to prepare slurry. 2

(B) Choose the appropriate answer from the given alternatives in each subquestion :

(i) Hardness of water which can be removed by boiling is :

(a) Total hardness (b) Temporary hardness

(c) Permanent hardness (d) All of these

(ii) Acid refractories are easily attacked by _____ material.

(a) Basic (b) Acidic

(c) Neutral (d) All of these

(iii) Which of the followings is a primary air pollutant ?

(a) CO_x (b) NO_x

(c) SO_x (d) All of these

(iv) Raw materials used for manufacture of nylon 6:6 are adipic acid and _____.

(a) Ethylene (b) Hexamethylene diamine

(c) Styrene (d) Formaldehyde 2

(C) Answer the following questions in **one** sentence each :

(i) What is function of accelerators in cement ?

(ii) Define Elastomer.

(iii) What are secondary air pollutants ?

(iv) What is pH ? 4

UNIT–I

2. (A) Discuss classification of Refractories. 4

(B) Give raw materials for the manufacture of glass. Explain its manufacturing process. 4

(C) Give composition and applications of high alumina bricks. 4

OR

3. (P) Discuss the types of Ceramics. 4

(Q) Give composition and properties of :

(i) Optical glass

(ii) Soda lime glass. 4

(R) Give an account on raw materials and composition of ceramics. 4

UNIT–II

4. (A) Describe the semi-dry process for manufacture of cement. 4

(B) Explain setting and hardening of cement. 4

(C) Give the properties of cement. 4

OR

5. (P) Give an account on various additives in cement. 4

(Q) Explain procedure to test compressive strength of cement. 4

(R) Discuss major engineering problems in manufacturing of cement. 4

UNIT–III

6. (A) Explain classification of polymers on the basis of physical properties. 4

(B) Discuss manufacture of nylon 6.6 with raw materials and reactions. 4

(C) Describe manufacturing process of polystyrene. 4

OR

7. (P) Describe manufacture of poly vinyl chloride. 4

(Q) What are Polymers ? Explain addition and condensation polymerization with example. 4

(R) Give manufacture of Teflon. 4

UNIT–IV

8. (A) Explain sources and effect of detergents as organic pollutants. 4

(B) What is hardness of water ? How is it determined by using E.D.T.A. ? 4

(C) Discuss natural sources of water in context with water quality. 4

OR

9. (P) What is acidity of water ? How is it determined experimentally ? Explain. 4

(Q) Explain sources and effects of Pb, Hg. 4

(R) Discuss sources of water pollution due to sugar industry. 4

UNIT–V

10. (A) Explain construction and working of trickling filters. 6

(B) Discuss sedimentation and filterization methods for treatment of waste water. 6

OR

11. (P) Explain activated sludge method for waste water treatment. 6

(Q) Discuss sterilization method for the treatment of waste water. 6

UNIT-VI

12. (A) Discuss sources and effects of NO_x as air pollutant. 4

(B) Explain determination of solid particulate matter with high volume sampler. 4

(C) Explain working of scrubber to remove pollutant from air with diagram. 4

OR

13. (P) What is Noise Pollution ? Give units for measurements of noise level. 4

(Q) What is Green House Effect ? Explain. 4

(R) Give an account of filters used in control of Air Pollution. 4

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