

B.E DEGREE EXAMINATIONS:MAY/JUNE 2014

(Regulation 2009)

Second Semester

CIVIL ENGINEERING

CHY102: Chemistry for Civil Engineering

Time: Three Hours**Maximum Marks: 100****Answer all the Questions:-****PART A (10 x 1 = 10 Marks)**

1. Priming and foaming in boilers produce
 - a) wet steam
 - b) dry steam
 - c) soft steam
 - d) hard steam
2. Hardness of water is expressed in terms of equivalents of
 - a) sodium carbonate
 - b) potassium carbonate
 - c) calcium carbonate
 - d) magnesium carbonate
3. A process in which metal is protected from corrosion by dipping it in molten zinc is known as
 - a) tinning
 - b) galvanization
 - c) cladding
 - d) electroplating
4. Corrosion is a process of
 - a) reduction
 - b) oxidation
 - c) ozonolysis
 - d) electrolysis
5. The chemical formula for lime stone is
 - a) $MgCO_3$
 - b) $CaCO_3$
 - c) Na_2CO_3
 - d) Li_2CO_3
6. When a paint is applied to metal surface, the thinner
 - a) evaporates
 - b) reduction
 - c) oxidation
 - d) reflected
7. A composite material possess
 - a) lower electrical conductivity
 - b) good strength
 - c) higher specific strength
 - d) all the above

8. Engineering plastics are a group of materials obtained from
 - a) high polymer resins
 - b) simple polymer resin
 - c) low polymer resins
 - d) none of the above
9. Lubricants are used to
 - a) reduce corrosion
 - b) reduce wearing
 - c) reduce seizure
 - d) all the above
10. Silica and alumina are the examples of
 - a) basic refractories
 - b) acidic refractories
 - c) neutral refractories
 - d) none of the above

PART B (10 x 2 = 20 Marks)

11. What is calgon? What is its use in water technology?
12. Distinguish between Carbonate hardness (CH) and non - Carbonate hardness (NCH).
13. Define Decarburization.
14. What is bimetallic corrosion
15. Write the uses of luminous paint and water repellent paint
16. Write the characteristics of composites?
17. What is the role of gypsum in cement?
18. What are the characteristics of good paint?
19. What is meant by pyrometric cone equipment (PCE) of a refractory?
20. What is hardness of an abrasive? What are its units?

PART C (5 x 14 = 70 Marks)

21. a) (i) What are ion exchange resins? Describe the demineralization process for softening of hard water. (8)
 - (ii) What is desalination? Explain the process of reverse osmosis technique with neat diagram (6)
- (OR)**
- b) Explain the various steps in the treatment of water for municipal supply.

22. a) (i) Explain electrochemical theory of corrosion by taking rusting of iron as an example (8)
(ii) Explain how corrosion of metals controlled by sacrificial anode method (6)
- (OR)**
- b) (i) What are the objectives of electroplating? Discuss the electroplating of copper (8)
(ii) Differentiate between chemical and electrochemical corrosion (6)
23. a) (i) How Portland cement is manufactured? Write the steps involved with a diagram. (10)
(ii) Discuss the properties and uses of white cement and water proof cement (4)
- (OR)**
- b) (i) Explain the process setting and hardening of cement with relevant chemical reactions (8)
(ii) What are the important constituents of paint? Explain the function of the various constituents (6)
24. a) (i) What are composites? What are the constituents and advantages of composites? (8)
(ii) Explain preparation and properties of fibre reinforced polymer composites. (6)
- (OR)**
- b) (i) Write any two properties and uses polyamide and polyurethanes (6)
(ii) Differentiate thermosetting resins from thermoplastic resins. (8)
25. a) (i) Write a note on synthetic abrasives (8)
(ii) Write the preparation, properties and uses of carborundum bricks. (6)
- (OR)**
- b) (i) Explain the structure of graphite and molybdenum disulphide and their use in lubrication (8)
(ii) Write a note on thermal spalling and porosity. (6)
