

B.E DEGREE EXAMINATIONS: JUNE 2010

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. Calgon is the trade name of
 - a) Sodium silicate
 - b) Calcium phosphate
 - c) Sodium hexa metaphosphate
 - d) Sodium zeolite
2. The formation of small persistent bubbles at the surface of water in the boiler is called as
 - a) Priming
 - b) Desalination
 - c) Forming
 - d) Caustic embrittlement
3. During galvanic corrosion, the more noble metal acts as
 - a) Anode
 - b) Cathode
 - c) Electrolyte
 - d) Anode and cathode
4. The rusting of iron is catalyzed by
 - a) H^+
 - b) O_2
 - c) Zn
 - d) Fe
5. Sorrel cement is made by
 - a) Magnesium chloride with calcined magnesia
 - b) Zinc chloride with calcined magnesia
 - c) Aluminum silicate with calcined silicate
 - d) Magnesium chloride with calcined silicate
6. The role of fillers in paint is
 - a) To reduce the volume
 - b) To increase the volume
 - b) To speed up the rate of drying
 - d) To prevent the peeling of paint
7. Whiskers are nothing but
 - a) Thin solids having two dimensional geometry
 - b) Thick solids having two dimensional geometry
 - c) Thin strong filaments
 - d) Thick strong filaments
8. Nylon- 6 is obtained from
 - a) Hexa methylene diamine
 - b) Adipic acid
 - c) Caprolactum
 - d) ω - amino undeccanoic acid

9. A good lubricant has
- | | |
|-----------------------|-------------------------|
| a) Low freezing point | b) High vapour pressure |
| c) Low boiling point | d) High freezing point |
10. Norbide is chemically known as
- | | | | |
|--------------------|------------------|------------|------------|
| a) Silicon carbide | b) Boron carbide | c) Alundum | d) Diamond |
|--------------------|------------------|------------|------------|

PART B (10 x 2 = 20 Marks)

11. What is reverse osmosis?
12. Why is water softened before using in boilers?
13. What is galvanic corrosion?
14. Bolt and nut made of the same metal is preferred in practice. Why?
15. What will happen, if gypsum is not added during grinding of clinkers?
16. What happens when lime is treated with water?
17. Define a composite material.
18. What is a fiber-reinforced composite?
19. How is thermal conductivity of a refractory related to its porosity?
20. What is aniline point?

PART C (5 x 14 = 70 Marks)

21. a) (i) Discuss briefly on domestic water treatment. (7)
- (ii) Write a note on corrosion in boilers. (7)
- (OR)**
- b) (i) Discuss the ion-exchange process for water softness with neat sketch. (7)
- (ii) Explain scale and sludge formation in boilers. How are they removed? (7)
22. a) (i) Enumerate the factors influencing the rate of corrosion. (7)
- (ii) Discuss any three types of corrosion. (7)
- (OR)**
- b) (i) What is cathodic protection? Explain sacrificial anode method. (7)
- (ii) Discuss briefly on copper electro plating. (7)
23. a) (i) Discuss briefly on setting and hardening of cement. (7)
- (ii) Explain the manufacture of lime with neat diagram. (7)

(OR)

- b) (i) Explain the drying oil mechanism of paint. (7)
(ii) Write a note on any three types of special paints. (7)

24. a) (i) Discuss briefly on any three types of composite materials. (7)
(ii) Give a brief account of constituents of composites. (7)

(OR)

- b) (i) Write a note on polymer blends and alloys. (7)
(ii) Write the preparation, properties and uses of poly carbonate and poly urethane. (7)

25. a) (i) Discuss any four essential properties of a good refractory material. (7)
(ii) Write a note on artificial abrasive material with suitable examples. (7)

(OR)

- b) (i) Discuss the preparation, properties and uses of high alumina and zirconia bricks. (7)
(ii) Write a note on solid lubricants. (7)
