



B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2013)

Second Semester

CIVIL ENGINEERING

U13CHT201 : Chemistry for Civil Engineering

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Temporary hardness in water can be removed by
 - a) Boiling
 - b) Cooling
 - c) Sedimentation
 - d) Filtration
2. Chlorine on adding to water produce acid, which is powerful germicide.
3. Corrosion in essence is a process of
 - a) Reduction
 - b) Oxidation
 - c) Electrolysis
 - d) Extraction of metals
4. In waterline corrosion the corrosion starts at.....
5. Major component of Portland cement is
 - a) Tricalcium silicate
 - b) CaO
 - c) MgO
 - d) CaSO₄
6. Opacity and desired colour to paint are provided by
7. Expansion of ECC related to construction materials is
 - a) Engineered Cementitious Composites
 - b) Engineered Ceramic Composites
 - c) Extra Ceramic Composites
 - d) Extenal Cementitious Composites
8. A plastic which can be reversibly softened on eating and hardened on cooling is called
9. Oiliness is least in case of
 - a) Greases
 - b) Mineral oils
 - c) Animal oils
 - d) Palm oil
10. A good lubricant has fire point.

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. What is meant by priming?
12. With proper equations explain calgon conditioning.
13. Impure metal corrodes faster than pure metal under identical conditions. Justify.
14. State Pilling Bedworth rule.
15. Define cement.
16. What is meant by heat of hydration?
17. Predict the role of compatibilizer in synthesis of polymer alloy?
18. Define the term polymer blend.
19. Define cloud point and pour point.
20. State the characteristics of a good refractory material.

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. a) How desalination of water is achieved by Reverse osmosis process? (7)
b) Discuss the coagulation and sand filtration processes in treatment of river water to obtain potable water. (7)

 22. a) (i) Outline the theory and reactions involved in differential aeration corrosion with reference to the iron materials. (7)
(ii) Explain sacrificial anodic method. (7)
- (OR)**
- b) (i) Compare and contrast chemical and electrochemical corrosion. (7)
(ii) Design an electrolytic bath used for deposition of copper over mild steel and explain the working with related chemical equations. (7)
-
23. a) (i) State the need for setting of cement and illustrate with equations the chemistry involved in setting and hardening of cement. (10)
(ii) What are lacquers? Differentiate varnish & lacquers. (4)
- (OR)**
- b) (i) List the ingredients in paint and discuss their functions with examples. (10)
(ii) Write a note on water proof cement. (4)
-
24. a) (i) What is FRP? Detail on the different types of Fiber Reinforced Plastics. (10)
(ii) Brief on Thermocole. (4)

(OR)

- b) (i) With suitable equations elaborate on polyurethanes. (7)
- (ii) What is a matrix phase and dispersed phase in a composite? Detail on metal matrix composite. (7)
25. a) (i) Illustrate the significance of the following in evaluation of refractory bricks (7)
- i) PCE test
- ii) RUL test
- (ii) What are abrasives? Classify abrasives and explain with example. (7)
- (OR)**
- b) (i) With a neat sketch explain Flash and fire point. (7)
- (ii) Elaborate on Graphite and Molybdenum disulphide using respective structures. (7)
