

**B.E DEGREE EXAMINATIONS: MAY/JUNE 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)**

- Caustic embrittlement in boilers is caused by the presence of .....in water
  - Magnesium carbonate
  - Sodium carbonate
  - Calcium chloride
  - Magnesium chloride
- The cationic resins are the polymer resins containing ----- groups
- When the corroded product on a metal is porous, the corrosion is -----
  - decreased
  - completely stopped
  - continued
  - reversed to metal
- When two different metals are present in a metallic structure in moist condition, the type of corrosion that occurs is -----
- The skinning of paints is avoided by mixing ----- in paints.
  - Polyhydroxy phenols
  - Dioctyl phthalate
  - Cobalt linoleate
  - Zinc oxide
- Water repellency property to cements may be imparted by -----
- Wood is a composite of ----- and lignin.
  - polyamide fibre
  - Epoxy resin
  - Cellulose fibre
  - Phenolic resin
- Thermocole is a cellular form of -----
- Of the abrasives given below, the one has the highest hardness is -----
  - carborundum
  - alundum
  - quartz
  - calcite
- A good lubricant should have ----- carbon residue.

**PART B (10 x 2 = 20 Marks)****(Not more than 40 words)**

- What is calgon conditioning?
- Define reverse osmosis.
- What is chemical corrosion?
- What is stress corrosion?
- What are the special properties of white Portland cement?
- What are lacquers?
- What is FRP?
- How is polycarbonate prepared? Give its reaction.
- What is the significance of refractoriness under load?
- What are lithium based greases?

**PART C (5 x 14 = 70 Marks)****(Not more than 400 words)****Q.No. 21 is Compulsory**

- What are composites? Explain their types with examples and applications.
- How is water softened by demineralization process. Give a suitable diagram to explain the process. (7)
    - Explain the following: scales and sludges. How can they be prevented? (7)

**(OR)**

  - Write on the treatment of common effluents.
- Explain electrochemical corrosion with its mechanism. (7)
    - What are the factors that influence corrosion. (7)

**(OR)**

  - Explain the cathodic protection methods with suitable illustrations. (7)
    - What is differential aeration corrosion? Give its mechanism. Mention any places where this corrosion is observed. (7)
- What is the chemistry involved in setting and hardening? (10)
    - List the constituents of paints? (4)

**(OR)**

- b) (i) What are temperature indicating and luminous paints? Give their constituents. (10)  
(ii) What are the water proof cement. (4)
25. a) (i) What are natural abrasives? Explain any four abrasives with their hardness values. (7)  
(ii) What are solid lubricants? Explain with examples. (7)

**(OR)**

- b) (i) Explain the following properties of lubricants: viscosity index, flash and fire point, cloud and pour point. (7)  
(ii) Write any three important properties of refractories. (7)

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