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Question Paper Code:51006

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

First Semester

Civil Engineering

15UCY106 - CHEMISTRY FOR CIVIL ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Arrange the covalent bond in increasing order of strength CO1-R
(a) C-I < C-Br < C-Cl < C-F (b) C-F < C-Br < C-Cl < C-I
(c) C-Br < C-F < C-Cl < C-I (d) C-Cl < C-I < C-Br < C-F
2. Which among the following is the weakest bond? CO1-R
(a) Covalent Bond (b) Ionic Bond
(c) Metallic Bond (d) Hydrogen Bond
3. Name the gases dissolved in water that cause corrosion CO2-R
(a) O₂, CO₂, SO₂ (b) H₂, H₂S, Cl₂ (c) O₂, Cl₂, Water vapour (d) None of the above
4. UV Rays are used in water treatment for CO2-R
(a) Illumination (b) Disinfection (c) Coagulation (d) Sedimentation
5. During rusting of iron metal CO3-R
(a) Corrosion occurs at cathode
(b) Corrosion product is deposited at anode
(c) Corrosion occurs at anode and rust is deposited at cathode
(d) Corrosion occurs at anode and rust is deposited at anode
6. Which parts of Corrosion cell undergo corrosion? CO3-R
(a) Anodic part (b) Cathodic part (c) Environment (d) Both a & b

7. Liming of soil is done by adding CO4-R
 (a) CaCO_3 (b) CaO (c) MgO (d) MgCO_3
8. Optimum growth of bacteria in soil CO4-R
 (a) Acidic (b) Alkali
 (c) Neutral to slightly alkaline (d) Slightly acidic to neutral
9. Which is the artificially prepared abrasives CO5-R
 (a) Corundum (b) Garnet (c) Quartz (d) Carborundum
10. Identify the refractory whose refractoriness is about 2500°C CO5-R
 (a) Magnesite (b) Zirconia (c) Alumina (d) Graphite

PART – B (5 x 2= 10Marks)

11. State Pauli's Exclusion Principle. CO1-R
12. List out the requirements of boiler feed water CO2-R
13. Define EMF CO3-R
14. Define Ion exchange adsorption CO4-R
15. Recall Refractoriness Under Load (RUL) CO5-R

PART – C (5 x 16= 80 Marks)

16. (a) Apply the concept of hybridization and explain the formation of Ethane, Ethylene, Acetylene and PCl_5 CO1-U (16)
 Or
 (b) (i) Describe the Characteristic properties of covalent and Metallic compounds CO1-App (6)
 (ii) Explain the Lattice energy of NaCl by using BHC . CO1-App (10)
17. (a) (i) What is desalination? Discuss any one process in detail with suitable diagram. CO2-U (8)
 (ii) Describe the demineralization process for softening of hard water. Mention the advantages and disadvantages of this method. CO2-U (8)
 Or
 (b) (i) What are scale & sludge? Analysis the harm full effect on boiler due to their formation CO2-U (8)
 (ii) Why is Sterilization of water necessary? Discuss any two method of Sterilization CO2-U (8)

18. (a) Compare the mechanism of Chemical (Dry) corrosion with Electrochemical corrosion (Wet) and analyze the end products formed during the reaction CO3-Ana (16)
- Or
- (b) (i) Explain how the corrosion can be controlled by sacrificial anode and impressed current method. CO3-Ana (8)
- (ii) Briefly analysis the various components of Paint with their functions CO3-Ana (8)
19. (a) Explain briefly about the cation exchange capacity occurring in the soil. Discuss the various factors influencing CEC. CO4-U (16)
- Or
- (b) (i) Write a brief note on Inorganic matter of soil. CO4-U (8)
- (ii) Explain how pH effects redox potential of soil. CO4-U (8)
20. (a) What are refractories? How are they classified? Explain any four important refractories CO5-U (16)
- Or
- (b) (i) Outline the manufacture, properties and uses of alumina bricks CO5-U (8)
- (ii) Write the significance of various chemical constituents present in cement manufacturing CO5-U (8)

