Reg. No. : | | | | | | | | | | |

Question Paper Code: 51106

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. Covalent bond is formed by

   (a) Complete transfer of valence electrons
   (b) Removal of electron from one atom
   (c) Both the electron are donated by same atom
   (d) Sharing of electrons

2. Vander waals forces are

   (a) Stronger than covalent bonds (b) Weaker than Covalent bonds
   (c) Stronger than ionic bonds (d) Stronger than coordinate bonds

3. The best method for desalination of brakish water is

   (a) Osmosis (b) Reverse osmosis
   (c) Filtration (d) Coagulation

4. In India drinking water parameters are standardized by

   (a) ISO (b) BIS (c) CECRI (d) FAD

5. The rate of corrosion increases when

   (a) The pH decreases (b) Temperature decreases
   (c) Purity increases (d) Grain size increases

6. In paints the reaction taking place are

(a) Oxidation only
(b) Polymerization only
(c) Oxidation and Polymerization
(d) Reduction only

7. The cation exchange capacity is expressed as _____ of dry soil.

(a) milliequivalent of hydrogen per 100g
(b) milliequivalent of hydrogen per 100mg
(c) milliequivalent of hydrogen per 100Kg
(d) milliequivalent of hydrogen per 100cg

8. The graph between the amounts of adsorbate (x) adsorbed on the surface of adsorbent (m) and pressure at constant temperature is called as

(a) adsorption oxidation
(b) adsorption isochore
(c) adsorption isobar
(d) adsorption isotherm

9. The change in shape of a refractory material due to change in temperature is called

(a) RUL
(b) Refractoriness
(c) Dimension stability
(d) Thermal spalling

10. In the manufacture of cement, gypsum is added to

(a) Increase the rate of setting incement
(b) Decrease the rate of setting incement
(c) Increase the strength of the cement
(d) None of these

PART - B (5 x 2 = 10 Marks)

11. With your own examples explain Inter molecular and Intramolecular hydrogen bonding.

12. How Calogen conditioning is carried out in a boiler?

13. Corossion will be more where the cathodic area is larger-justify?

14. What is meant by buffering capacity?

15. Define refractories under load.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) With examples explain various types of Hybridization. (8)

(ii) Construct a molecular orbital diagram for nitrogen and calculate the bond order. (8)

Or

(b) (i) Construct Born-Haber cycle for NaCl. (8)

(ii) With suitable example explain molecular orbital theory. (8)

17. (a) (i) How Permenant and Temperory hardness in a sample of water can be calculated by EDTA method. (8)

(ii) Explain the various steps that are involved for domestic water treatment. (8)

Or

(b) (i) How ion exchange methods is applicable for the conversion of hard water to soft water. What are its advantages? (8)

(ii) How Reverse osmosis is helpful in desalination of Brakish water? How is it more advantageous than other methods? (8)

18. (a) (i) Derive Nernst equation for electrode potential. (8)

(ii) Explain the mechanism of wet corrosion with suitable example. (8)

Or

(b) (i) List and explain the various factors that influence corrosion. (8)

(ii) What is paint? Give its constituents and functions with suitable example. (8)

19. (a) (i) Explain the various factors that affects the sorption of soil. (6)

(ii) What is meant by adsorption isotherm? With examples explain various types of adsorption isotherms. (10)

Or

(b) (i) What are sodic soils? List some remedial measures that can be taken to improve the quality of sodic soils? (6)

(ii) Explain the various types of surface forces of particles. (10)

20. (a) What are refractories? How are they classified? Explain any four important refractories. (16)

Or

(b) (i) How zirconia bricks are manufactured. (6)

(ii) Explain the manufacture of Portland cement from its raw materials. (10)

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