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

Question Paper Code: 41014

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

First Semester

14UCY104 – ENGINEERING CHEMISTRY

(Common to Civil and Mechanical Branches)

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. Natural rubber is _____ form of polyisoprene

(a) CiS (b) trans (c) PLA (d) Lexan

2. Name the monomer present in latex

(a) butane (b) ethylene (c) isoprene (d) acetylene

3. Semi-solid lubricant is

(a) Graphite (b) MoS_2 (c) Grease (d) CNT

4. _____ is responsible for flash setting of cement

(a) C_3S (b) C_3A (c) C_2A (d) C_2S

5. An example of cathodic inhibitor is

(a) Hydrazine (b) Calcium sulphate
(c) Benzotriazole (d) Calcium carbonate

6. Name the metal in which volume of the oxide is greater than that of metal

(a) Mg (b) Cr (c) Mo (d)Hg

7. Silca is a good _____

(a) Adsorbate (b) Adsorbent (c) Catalyst (d) Promoter

8. Multilayer adsorption occurs in

(a) Physical adsorption (b) Chemical adsorption
(c) Both (d) Ion-exchange adsorption

9. Which transition has lowest energy level electronic transition?

(a) $\sigma - \sigma^*$ (b) $n - \sigma^*$ (c) $\pi - \pi$ (d) $n - \pi^*$

10. A shift of an absorption maximum towards longer wavelength is called

(a) Blue shift (b) Red shift
(c) Hyperchromic effect (d) Hypochromic effect

PART - B (5 x 2 = 10 Marks)

11. What is condensation polymerization? Give an example.

12. What are refractories? How are they classified?

13. Mention the advantages of electroless plating over electroplating.

14. What is Freundlich's adsorption isotherm?

15. State Beer- Lamberts law.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Write the free radical mechanism for the synthesis of PVC. (8)

(ii) Differentiate addition polymerization from condensation polymerization. (8)

Or

(b) (i) Write a detailed note on fibre reinforced composites. (8)

(ii) Differentiate between thermoplastics and thermosets. (8)

17. (a) (i) Explain the general method for the manufacture of refractories. (8)

(ii) Describe the process of setting and hardening of cement. (8)

Or

(b) (i) Explain any four properties of lubricants. (8)

(ii) Explain hydrodynamic lubrication mechanism. (8)

18. (a) (i) Explain the mechanism of electrochemical corrosion. (8)

(ii) What is electroplating? Describe the method of electroplating of gold. (8)

Or

(b) (i) Explain any four basic constituents and functions of paints. (8)

(ii) Give an account of electroless plating of Ni. (8)

19. (a) (i) Derive an expression for Langmuir adsorption isotherm. (10)

(ii) Write short notes on autocatalysis. (6)

Or

(b) (i) Explain ion-exchange adsorption in the treatment of water. (8)

(ii) Explain the adsorption theory of catalysis. (8)

20. (a) (i) Explain the instrumentation and working of UV-visible spectrophotometer. (8)

(ii) Explain the estimation of Ni by atomic absorption spectroscopy. (8)

Or

(b) (i) Explain the estimation of nickel by atomic absorption spectroscopy. (8)

(ii) Derive Beer-Lambert's law. What are its limitations. (8)

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