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

Question Paper Code: 41104

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

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. Polycarbonate is also called as _____

(a) Perlon-U (b) Fluon (c) HDPE (d) Lexan

3. Semi-solid lubricant is

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

4. The example of solid lubricant is

(a) Grease (b) Vaseline (c) MoS_2 (d) Castor oil

5. An example of cathodic inhibitor is

(a) Hydrazine (b) Calcium sulphate

(c) Benzotriazole (d) Calcium carbonate

6. As the acidity increases, the rate of corrosion

(a) No effect (b) Increases (c) Decrease (d) Remaining the same

7. Silca is a good _____

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

8. Adsorption of H_2 gas on Ni is an example of _____

(a) Physisorption (b) Absorption (c) Chemisorption (d) Zeolite process

9. Which transition has lowest energy level electronic transition?

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

10. Atomic structure of the crystal is founded by

(a) XRD (b) UV spectroscopy

(c) IR spectroscopy (d) Flame photometry

PART - B (5 x 2 = 10 Marks)

11. What is polymerization?

12. What are refractories? How are they classified?

13. Define the terms "Flash point and Fire point".

14. What is Freundlich's adsorption isotherm?

15. What are chromopores?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Describe the steps involved in formation of polyethylene by free radical mechanism. (8)

(ii) Describe the preparation, properties and application of Teflon and polyurethane. (8)

Or

(b) (i) Explain why natural rubber needs vulcanization. How is it carried out? (8)

(ii) Write the differences between addition and condensation polymerization reactions with an suitable example for each type. (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) What are solid lubricants? Explain the structure of any one solid lubricant. (8)

(ii) Discuss the applications of carbon nanotubes in medical field and chemical field. (8)

18. (a) (i) Explain the mechanism for rusting iron on the basis of electrochemical corrosion. (8)

(ii) What is cathodic protection? How is sacrificial anode method applied for corrosion control. (8)

Or

(b) (i) Give an account of any four factors that influence the rate of corrosion. (8)

(ii) What are the constituents and functions of paint? (8)

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

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

Or

(b) (i) Explain the role of activated carbon in pollution abatement. (10)

(ii) Discuss the factors that influence the adsorption of solute from solution. (6)

20. (a) (i) Derive the Beer - lambert's law. Write its limitations. (6)

(ii) Give a brief account on estimation of nickel by atomic absorption spectroscopy. (10)

Or

(b) (i) Explain the principle and instrumentation of UV visible spectroscopy. (8)

(ii) How will you estimate the amount of sodium by flame photometry? (8)

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