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

Question Paper Code: 41104

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2015.

First Semester

Civil Engineering

14UCY104 – ENGINEERING CHEMISTRY

(Common to Mechanical Engineering)

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. Which of the following may be used as initiator in addition polymerization?

(a) Potassium di chromate (b) Potassium sulphate .

(c) Benzoyl peroxide (d) Sodium hydroxide

2. Polycarbonate is also called as _____

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

3. Which of the following is a neutral refractory?

(a) Fire clay (b) Bakelite (c) Magnesite (d) Graphite

4. The example of solid lubricant is

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

5. Presence of copper as impurity in zinc causes

(a) Water line corrosion (b) Crevice corrosion

(c) Pitting corrosion (d) Galvanic corrosion

6. As the acidity increases, the rate of corrosion

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

7. The activity of a catalyst is enhanced by the presence of a substance called as

(a) Super catalyst (b) Promoters (c) Catalytic poison (d) Inhibitor

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

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

9. The wave length region of near UV radiation is

(a) 400nm -750 nm (b) 800nm-7200 nm

(c) 200nm-400nm (d) 0nm-100nm

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 are the limitations of Freundlich’s adorption 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) Give the preparation, properties and uses of magnesite. (8)

(ii) Discuss any four important properties of a lubricant. (8)

Or

(b) (i) Describe the process of manufacture of Portland cement with a schematic diagram. (8)

(ii) Write short notes on "carbon nano tubes". (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) Discuss Langmuir theory of adsorption and derive the expression for Langmuir monolayer adsorption isotherm. (16)

Or

(b) (i) Discuss any four factors which influence the adsorption of gas on solid. (8)

(ii) Distinguish between physical adsorption and chemical adsorption. (8)

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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