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

Question Paper Code: 41004

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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. 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. A steel screw in a brass marine hardware corrodes, due to

(a) Galvanic corrosion (b) Differential aeration corrosion

(c) Waterline corrosion (d) Dry corrosion

6. As the acidity increases, the rate of corrosion

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

7. Sorption means

(a) adsorption (b) adsorption & desorption
(c) adsorption & absorption (d) absorption

8. Multilayer adsorption occurs in

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

9. AAS technique is limited to only

(a) Non-metals (b) Metals
(c) Halogen (d) Gaseous elements

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. State Beer- Lamberts law.

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) 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)

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) What is cathodic protection? Explain the sacrificial anode and impressed current method. (8)

(ii) What are the constituents and functions of paint? (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) Distinguish between physical adsorption and chemical adsorption. (8)

(ii) Derive Langmuirs adsorption isotherm. (8)

Or

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

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

20. (a) (i) What are the types of electronic transitions? (2)

(ii) What are auxochromes and chromophores? Give examples. (6)

(iii) Draw the block diagram of UV visible spectrometer and explain the ponents. (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)