|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |

 **Reg. No. :**

**Question Paper Code: 41004**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. | Name the monomer present in latex | CO1- R |
|  | (a) butane  | (b) ethylene  |
|  | (c) isoprene  | (d) acetylene |
| 2. | Natural rubber is \_\_\_\_\_\_\_\_ form of polyisoprene | CO1- R |
|  | (a) CiS  | (b) trans  | (c) PLA | (d) Lexan |
| 3. | Which of the following is a neutral refractory? |  CO2- R |
|  | (a) Fire clay  | (b) Bakelite | (c) Magnesite  | (d) Graphite |
| 4. | \_\_\_\_\_\_\_\_\_\_\_\_ is responsible for flash setting of cement |  CO2- R |
|  | (a) C3S  | (b) C3A  | (c) C2A  | (d) C2S |
| 5. | Name the metal in which volume of the oxide is greater than that of metal | CO3- R |
|  | (a) Mg | (b) Cr | (c) Mo | (d) Hg |
| 6. | Corrosion on wire fence is a example of \_\_\_\_\_\_\_\_ | CO3- R |
|  | (a) Galvanic corrosion | (b) Differential aeration corrosion |
|  | (c) Dry corrosion  | (d) All the above |
| 7. | Silca is a good \_\_\_\_\_\_\_\_ | CO4- R |
|  | (a) Adsorbate | (b) Adsorbent  | (c) Catalyst  | (d) Promoter |
| 8. | Adsorption of H2 gas on Ni is an example of \_\_\_\_\_\_\_ | CO4- R |
|  | (a) Physisorption  | (b) Absorption  | (c) Chemisorption | (d) Zeolite process |
| 9. | Which transition has lowest energy level electronic transition? | CO5- R |
|  | (a) σ - σ \*  | (b) n - σ \*  | (c) π –π  | (d) n- π \*  |
| 10. | The wave length region of near UV radiation is | CO5- R |
|  | (a) 400nm -750 nm  | (b) 800nm-7200 nm  | (c) 200nm-400nm  | (d) 0nm-100nm |
|  | PART – B (5 x 2= 10Marks) |
| 11. | What is condensation polymerization? Give an example. CO1- U |
| 12. | What are refractories? How are they classified? CO2- U |
| 13. | Recommend any two methods for avoiding corrosion. CO3- Ana |
| 14. | What is Freundlich’s adsorption isotherm? CO4-U |
| 15. | State Beer- Lamberts law. CO5- U |
|  | PART – C (5 x 16= 80 Marks) |
| 16. | (a) | (i) Describe the steps involved in formation of polyethylene by  free radical mechanism.  | CO1- U |  (8) |
|  |  | (ii) Describe the preparation, properties and application of  Teflon and polyurethane.  | CO1- U |  (8) |
|  |  | Or |  |  |
|  | (b) |  (i) Write the free radical mechanism for the synthesis of PVC.  | CO1- U |  (8)  |
|  |  | (ii) Differentiate addition polymerization from condensation  polymerization. | CO1- Ana |  (8) |
|  |  |  |  |   |
| 17. | (a) | (i) Explain the general method for the manufacture of  refractories.  | CO2- U |  (8) |
|  |  | (ii) Describe the process of setting and hardening of cement.  | CO2- U |  (8) |
|  |  | Or |  |  |
|  | (b) | (i) Explain any four properties of lubricants.  | CO2- U |  (8) |
|  |  | (ii) Explain hydrodynamic lubrication mechanism.  | CO2- U |  (8) |
|  |  |  |  |  |
| 18. | (a) | Explain the mechanism of electrochemical corrosion.  | CO-3 Ana |  (16) |
|  |  | Or |  |  |
|  | (b) | Give an account of any four factors that influence the rate of corrosion.  | CO3- Ana |  (16) |
|  |  |  |  |  |
| 19. | (a) | Derive an expression for Langmuir adsorption isotherm.  | CO4-App |  (16) |
|  |  | Or |  |  |
|  | (b) | Explain the role of activated carbon in pollution abatement. | CO4- U |  (16) |
|  |  |  |  |  |
| 20. | (a) | Give a brief account on estimation of nickel by atomic absorption spectroscopy.  | CO5-App |  (16) |
|  |  | Or |  |  |
|  | (b) | (i)Explain briefly the principle and instrumentation of flame  photometry. | CO5-App |  (10) |
|  |  | (ii) A solution of thickness 2cm transmits 40% incident light.  Calculate the concentration of the solution, given that $ ε$=6000 *dm*3 *mol-1 cm-1.* | CO5-App |  (6) |