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**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  =6000 *dm*3 *mol-1 cm-1.* | | | | | CO5-App | (6) |