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**Question Paper Code: 31004**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2021

First Semester

Civil Engineering

01UCY104 - ENGINEERING CHEMISTRY

(Common Mechanical Engineering)

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is meant by functionality of a monomer?
2. Define composite materials.
3. What is meant by refractoriness under load?
4. Define flash point.
5. What is electroless plating?
6. What are Vapour Phase Inhibitors (VPI)?
7. State why the presence of a catalytic poison destroys the activity of the catalyst.
8. Give an example of auto catalysis reaction.
9. What is flame photometry? Name few metals which can be easily detected by this method.
10. What are the types of electronic transitions?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Differentiate thermoplastic from thermosetting plastic with an example. (8)  
(ii) Describe the methods of preparation, properties and applications of Teflon and Polyurethane. (8)
- Or
- (b) (i) Discuss in detail about the preparation, properties and uses of polyethylene. (8)  
(ii) What are composites? Explain their types. (8)
12. (a) (i) Discuss briefly on any four important properties of refractory materials. (8)  
(ii) Describe the manufacture of Portland cement by wet process. (8)
- Or
- (b) What are solid lubricants? Mention their advantages with a neat sketch, explain the functioning of any one solid lubricant. (16)
13. (a) (i) Explain the environment based factors which influence the rate of corrosion. (8)  
(ii) What are cathodic and anodic protections for controlling corrosion? Discuss their merits and demerits. (8)
- Or
- (b) (i) How is corrosion controlled by sacrificial anode and impressed cathodic current methods? (8)  
(ii) Discuss briefly on important constituents and their functions of paint. (8)
14. (a) (i) Stating the assumptions based on which it is derived, derive the Langmuir adsorption isotherm. Interpret the results at low pressure and high pressure. Mention its demerits. (8)  
(ii) Distinguish between physisorption and chemisorption. (8)

Or

- (b) (i) Describe any three methods of removal of heavy metals from effluents. (8)  
(ii) Discuss briefly on catalysis. (8)

15. (a) (i) Discuss with a neat diagram, the principle, instrumentation, working and applications of XRD. (8)  
(ii) How is Nickel estimated by atomic absorption spectroscopy? Explain the principle and instrumentation. (8)

Or

- (b) Explain the principle and estimation of iron by UV-visible spectrometry. (16)
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