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**Question Paper Code: 11004**

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER 2013.

First Semester

Civil Engineering

01UCY104 - ENGINEERING CHEMISTRY

(Common to Mechanical Engineering)

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Represent the repeating unit of Teflon and SBR.
2. Name any two initiators used in free radical polymerization.
3. Define the term thermal spalling.
4. Differentiate between graphite and carbon nanotube.
5. Furnish the electrode reactions of differential aeration corrosion.
6. How are metallic coatings produced?
7. What is adsorption isotherm?
8. Define autocatalysis with a suitable example.
9. Bring out the differences between chromophore and auxochrome.
10. Write the principle of XRD.

PART -- B ( 5 x 16 = 80 Marks)

11. (a) (i) Give an account of the classification of polymers with two examples for each class. (8)
- (ii) Explain the method and mechanism of vulcanization of rubber. (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) Explain the classification of refractories. Provide the preparation of each class with suitable example. (8)
- (ii) Explain how molybdenum sulphide functions as a lubricant. (8)

Or

- (b) (i) Explain setting and hardening of cement with chemical equations. (8)
- (ii) Discuss any four important properties of lubricants. (8)
13. (a) (i) Explain the mechanism of chemical corrosion. (8)
- (ii) What are corrosion inhibitors? How do they function? (8)

Or

- (b) (i) List the constituents of paint and their functions. (8)
- (ii) Explain the factors influencing corrosion. (8)
14. (a) (i) Compare and contrast Freundlich and Langmuir adsorption isotherms. (8)
- (ii) Give an elaborate account of adsorption in pollution abatement. (8)

Or

- (b) (i) Explain the characteristics of catalysis. (8)
- (ii) How is the adsorption process identified as physical or chemical? (8)
15. (a) (i) Discuss the types of electronic transitions and their regions of absorptions in the electromagnetic spectrum. (8)
- (ii) Explain the principle and estimation of sodium by flame photometry. (8)

Or

- (b) (i) Explain the instrumentation of AAS with block diagram. (8)
- (ii) Derive Beer-Lambert's law and discuss its applications and limitations. (8)
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