

Reg. No. :

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Question Paper Code : Q 2706

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Annual Pattern — First Year

Civil Engineering

CY 1 X 01 — ENGINEERING CHEMISTRY

(Common to All branches Except Marine Engineering/Metallurgical Engineering/Textile Technology (Textile Chemistry))

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How is silicon carbide manufactured?
2. What is compounding of plastics?
3. What is positive adsorption?
4. Define phase rule and indicate the terms involved in it.
5. What is galvanic corrosion?
6. Give the principle of anodizing.
7. Which phosphate is used for treating alkaline water to be fed to boiler?
8. Write the cathodic and anodic reactions in the lead acid batteries during charging.
9. Define gross and net calorific values.
10. What is Beer Lambert's law?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss in detail the classification and characteristics of refractories. (8)
- (ii) What are adhesives? Give their classification with examples. Explain the bonding process in adhesives. (8)

Or

- (b) (i) Explain various properties of a lubricant. (8)
- (ii) Explain the properties and applications of PVC, teflon, polycarbonate and polyurethane. (8)
12. (a) (i) Derive Langmuir's adsorption equation. (8)
- (ii) Discuss the role of activated carbon in pollution abatement of air and waste water. (8)

Or

- (b) (i) Draw and explain the phase diagram of lead-silver system. (8)
- (ii) Write an explanatory note on nichrome and stainless steel. (8)
13. (a) (i) What is electrochemical corrosion? Explain its mechanism. (8)
- (ii) How is corrosion controlled by cathodic protection and sacrificial anodic method? (8)

Or

- (b) (i) What are varnishes and lacquers? Explain the mechanism of drying of oil paints. (8)
- (ii) What is electroplating? What are the factors which influence the quality of electroplating? (8)
14. (a) (i) Explain demineralization process with a neat sketch. (8)
- (ii) Discuss the various steps involved in the domestic water treatment. (8)

Or

- (b) (i) What is nuclear energy? Write a note on the essential components of light water nuclear power plant. (8)
- (ii) Enumerate the principles and applications of solar cells. (8)

15. (a) (i) What is synthetic petrol? How is it prepared through Fischer-Tropsch's process? (8)
- (ii) A gaseous fuel has the following composition by volume : (8)
Methane = 5%; Hydrogen = 20%; Carbon monoxide = 25%, carbon dioxide = 6% and rest nitrogen. If 30% excess air is used for combustion, calculate the air required per m^3 of fuel.

Or

- (b) (i) How is iron estimated by calorimetry? (8)
- (ii) Explain the principle of flame photometry along with a block diagram. (8)