

Question Paper Code : 97050

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

First Semester

Civil Engineering

CY 6151 — ENGINEERING CHEMISTRY – I

(Common to all Branches except Marine Engineering)

(Regulation 2013)

Time : Three hours www.universityquestions.in Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are copolymers?
2. What are thermoplastics?
3. What is the significance of decrease in free energy?
4. State second law of thermodynamics.
5. What is photochemistry?
6. What is the purpose of a IR spectrometer?
7. What is the degree of freedom at eutectic point in Lead-Silver system?
8. Mention any two significance of alloy making.
9. What is meant by nanochemistry?
10. What are nanorods?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the mechanism of condensation polymerisation in detail. (8)
(ii) Explain any four important properties of polymers. (8)

Or

- (b) (i) Describe the emulsion polymerisation technique. Give two examples. (8)
- (ii) Write down the preparation, properties and uses of Nylon 6:6. (8)
12. (a) (i) Derive Gibbs-Helmholtz equation. (8)
- (ii) ΔG for a reaction at 300 K is -16 K.Cal , ΔH for the reaction is -10 K.Cal . What is the entropy (ΔS) of the reaction? What will be ΔG at 300 K? (8)

Or

- (b) (i) Derive Clausius-Clapeyron equation and mention its applications. (8)
- (ii) Derive van't Hoff's isotherm equation. (8)
13. (a) (i) State and explain Lambert-Beer Law. (8)
- (ii) Explain Photosensitisation. Mention its applications in photography. (8)

Or

- (b) (i) Explain
- (1) Quantum efficiency and
- (2) Chemiluminescences. (8)
- (ii) Discuss the principle and instrumentation of UV-Visible spectrometer. (8)
14. (a) (i) Draw a neat one component water system and explain. (8)
- (ii) Draw a neat Zinc-Magnesium alloy system and explain. (8)

Or

- (b) (i) Write Notes on :
- (1) Annealing and
- (2) Nitriding. (8)
- (ii) Discuss the composition, properties and uses of brass and bronze. (8)
15. (a) (i) Explain the chemical vapour deposition with a neat diagram. (8)
- (ii) Describe the preparation of any two methods of carbon nanotubes. (8)

Or

- (b) (i) Explain laser ablation. (8)
- (ii) Discuss any four applications in the nanotechnology. (8)