Question Paper Code : 71695

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

First Semester

Civil Engineering

CY 6151 — ENGINEERING CHEMISTRY — I

(Common to all branches except Marine Engineering)

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Degree of polymerisation?

2. What are homo and hetero chain polymers? Give an example for each.

3. What is Helmoltz work Function?

4. Define entropy.

5. Define Grotthus–Draper Law.

6. What is Photosensitization? Give Examples.

7. What is Degree of Freedom?

8. What are the applications of Phase Diagrams?

9. What are Carbon Nano Tubes?

10. How is CNT used in fuel cells?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in detail about Cationic and anionic polymerization. (16)

Or

(b) Discuss in detail about bulk, solution, suspension and emulsion polymerization techniques. (16)

12. (a) Derive (i) Gibbs – Helmoltz and (ii) Maxwell equations. (8+8)

Or

(b) The equilibrium constant K_p for a reaction is 3.0 at 673K and 4.0 at 773 K. Calculate the value of $\Delta H°$ for the reaction (R = 8.3J). (16)

13. (a) Discuss the following photo process in detail:

(i) Internal Conversion (6)

(ii) Intersystems crossing. (5)

(iii) Phosphorescence. (5)

Or

(b) Discuss the principle and instrumentation of UV-Visible spectroscopy. (16)

14. (a) Explain the phase rule for water system. (16)

Or

(b) Define the terms with respect to alloys.

(i) Annealing (6)

(ii) Hardening (5)

(iii) Normalizing. (5)

15. (a) Discuss in Detail about the synthesis of carbon nano tubes. (16)

Or

(b) Explain the applications of Nanoparticles.

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