Reg. No. : | | | | | | | | | | | |

Question Paper Code : Q 2170

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

Second Semester

Electrical and Electronics Engineering

CY 1151 — CHEMISTRY – II

(Common to B.E. Electronics & Instrumentation Engineering and Instrumentation & Control Engineering)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. State and explain Grothus-Draper Law.
2. What are photo inhibitors? Give one example.
3. What is a polymer blend?
4. How is urea formaldehyde prepared?
5. What is hydrogen embrittlement?
6. State and explain Pauling – Bedworth rule.
7. What do you mean by supercritical mass and subcritical mass of U^{235}?
8. What are fuel cells?
9. What is electrowinning process? How is it carried out?
10. How does the Helmholtz layer model explain the electrode- solution interface?

PART B — (5 × 16 = 80 marks)

11. (a) (i) When a sample of gaseous HI was irradiated with light of wavelength 253.7 nm, 307 J of energy was found to decompose 1.30×10^{-3} moles of HI. Calculate the quantum yield for the decomposition of HI. (6)

(ii) Describe the mechanism of photosensitization and quenching. (10)

Or

(b) Explain the principle of radiolysis. Discuss the various steps involved in the radiolysis of water vapour. (16)

12. (a) What are the factors that influence the electronic behaviour of conducting polymers? Discuss in detail using suitable examples. (16)

Or

(b) What are optical fibers? Explain the principle and structure of optical fibers.

13. (a) What is electrochemical corrosion? Discuss the mechanism of hydrogen evolution type corrosion. (16)

Or

(b) Discuss in detail the principle involved in electroless plating. What are the advantages of electroless plating over electroplating? (12 + 4)

14. (a) What is a nuclear reactor? What are its main components? Write in detail. (16)

Or

(b) Discuss in detail the construction, working and recharging of lead storage cell. (16)

15. (a) Explain the theory of electron transfer in homogeneous solutions. (16)

Or

(b) Write short notes on

(i) Enzyme based voltammetric sensors. (8)

(ii) Electrochemical Machining. (8)