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B.E. / B. TECH. (FULL TIME) END SEMESTER EXAMINATIONS NOV / DEC 2013

COMMON TO ELECTRICAL AND ELECTRONICS ENGINEERING AND
ELECTRONICS AND INSTRUMENTATION ENGINEERING BRANCHES

SEMESTER II

CY8252 CHEMISTRY FOR ELECTRICAL AND ELECTRONICS ENGINEERING
(REGULATIONS 2012)

DURATION: 3 HOURS

MAX. MARKS: 100

ANSWER ALL QUESTIONS

PART-A (10 x 2 = 20 Marks)

1. Represent the electrochemical cell made of Cu and Fe electrodes and write down the overall cell reaction.
2. What is a concentration cell? Give an example.
3. How does a nuclear change differ from a chemical change?
4. Write down the redox reactions taking place during the discharge of an alkaline battery.
5. How are epoxy resins prepared?
6. Classify solids on the basis of their conductivity with an example for each class.
7. Differentiate thermoplastics from thermosets on the basis of their thermal behavior.
8. What are the causes of priming and foaming in boilers?
9. What is the principle of differential scanning calorimetry?
10. What is the principle of AFM?

PART-B (5 X 16 = 80 Marks)

11. i) Explain the principle, instrumentation and applications of Atomic Absorption Spectroscopy. (10)
ii) Outline the principle of thermogravimetric analysis and mention any two of its applications. (6)

- 12.a. i) Derive Nernst equation to calculate the electrode potential of a single electrode. (8)
- ii) Describe the construction and working of a standard hydrogen electrode and saturated calomel electrode. (8)

(OR)

- 12.b. i) Describe the measurement of emf of an electrochemical cell by Poggendorf's method. (8)
- ii) Discuss the significance of emf series. (8)

- 13.a. i) With a neat sketch, explain the components and working of a light water nuclear reactor. (6)
- ii) Discuss the construction and working of any one type of fuel cell. (6)
- iii) Explain the characteristics of nuclear fission with suitable examples. (4)

(OR)

- b. i) Discuss the principle and working of solar cells. (8)
- ii) Write down the redox reactions occurring during charging and discharging of a lithium ion battery and mention its advantages over Ni-Cd batteries. (4)
- iii) Explain the principle of a breeder reactor with an example. (4)

- 14.a. i) On the basis of band theory, explain the formation of p and n type semiconductors. (8)
- ii) Describe the preparation, properties and uses of any two synthetic rubbers. (8)

(OR)

- b. Write informative notes on : i) Optical fibers, ii) photoresists, iii) superconductors and iv) conducting polymers. (4x4 =16)

- 15.a. i) Explain the internal conditioning methods for the prevention of scales in boilers. (8)
- ii) Discuss the cause, effect and control of caustic embrittlement and corrosion in boilers. (8)

(OR)

- b. i) With a neat schematic diagram, explain the ion exchange method for the external conditioning of boiler feed water. (8)
- ii) Write informative notes on reverse osmosis. (4)
- iii) Discuss the causes and effects of scales and sludges in boilers. (4)