C 15006 (Pages : 2) Name...........................

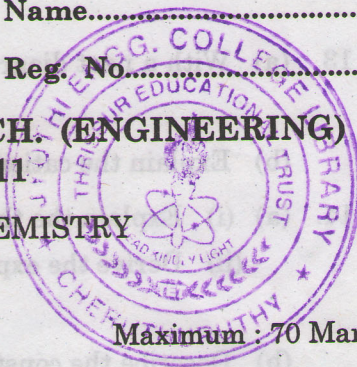Reg. No...........................

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2011

EN 09 104/PTEN 09 104—ENGINEERING CHEMISTRY

(2009 admissions)

Time : Three Hours
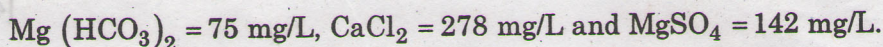
Maximum : 70 Marks

Part A

Answer all questions.
Each question carries 2 marks.

1. Differentiate between *n*-type and *p*-type semiconductors.

2. A sample of water contains the following impurities :—

   $Mg(HCO_3)_2 = 75$ mg/L, $CaCl_2 = 278$ mg/L and $MgSO_4 = 142$ mg/L.

   Calculate the temporary and permanent hardness.

3. Name the monomers of Bakelite.

4. What is an hydrogen electrode ?

5. What is direct corrosion ?

(5 × 2 = 10 marks)

Part B

Answer any four questions.
Each question carries 5 marks.

6. Explain the classification and applications of liquid crystals.

7. How is water softened by lime soda process ?

8. Briefly discuss the applications of polymers in electrical and electronic industry.

9. Derive the expression for EMF in concentration cells.

10. How is pH measured using glass electrode ?

11. Discuss differential aeration corrosion with an example.

(4 × 5 = 20 marks)

Part C

Answer Section (a) or Section (b) of each question.
Each question carries 10 marks.

12. (a) (i) Write a short note on ultrapure silicon production.

    (ii) Give the BIS specification for drinking water.

    Or

    (b) How is hardness of water determined experimentally by EDTA method ?

Turn over

13. (a) With a neat diagram, discuss the demineralization of water using ion exchange method.

Or

(b) Explain the cationic, anionic and free radical mechanisms of polymerization reactions.

14. (a) (i) Explain the theory of extreme pressure lubrication.   (5 marks)

     (ii) Derive the expression for single electrode potential.   (5 marks)

Or

(b) Describe the construction and functioning of lead acid accumulators and Ni-Cd cells.

15. (a) Briefly discuss on galvanic series and galvanic corrosion.

Or

(b) (i) Explain the cause and consequence of photochemical smog.   (5 marks)

     (ii) What is thermal pollution ? What are its efefcts ?   (5 marks)

[4 × 10 = 40 marks]