C 5766 (Pages : 2) Name.....

Reg. No.....

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2005

EN2K 104 A. ENGINEERING CHEMISTRY (A)

(Common to AI, CS, EE, EC, IT, IC)

Time : Three Hours Maximum : 100 Marks

1. (a) Write about the forces binding the constituent units in ionic solids and their properties.
   (b) What are the applications of liquid crystals ?
   (c) Define the term Standard electrode potential. How can it be measured ?
   (d) What is a reference electrode ? Give examples.
   (e) Give the differences between Metallic and Non-metallic coatings.
   (f) How is corrosion caused ? What are the conditions of dry corrosion ?
   (g) What are synthetic lubricants ? Give some important lubricants.
   (h) Define the different ways by which the molecular weight of a polymer is expressed ? What is index of polydispersity ?

(8 × 5 = 40 marks)

2. (a) Explain the conduction process in intrinsic and extrinsic semiconductors.

Or

   (b) Discuss on the different crystal imperfections in solids.

(15 marks)

3. (a) (i) The potential of a hydrogen gas electrode in a solution of an acid of unknown strength is 0.29 V at 298 K as measured against a normal hydrogen electrode, calculate the pH of the acid solution.

(7 marks)

   (ii) Give the characteristics of a fuel cell. (7½ marks)

Or

   (b) With a neat sketch, explain the determination of e.m.f. using a potentiometer. What is a standard cell ? Give an example.

(15 marks)

4. (a) Give a detailed account of the cementation process.

Or

   (b) What is a smog ? How is it formed ? Give the different types of smog and the remedial measures.

(15 marks)

Turn over

5. (a) What is an elastomer ? Give the mechanism of vulcanisation and its advantages.

Or

(b) Discuss on the different mechanisms of lubrication.

(15 marks)

[4 × 15 = 60 marks]