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Name.....

Reg. No.....

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING)  
DEGREE EXAMINATION, DECEMBER 2008

Chemistry

EN 04 104 (A)—ENGINEERING CHEMISTRY (B)

(AI, CS, EE, EC, IT, IC, BM, BT, PT)

[2004 Admissions]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions

- I. (a) Explain 'Plane of symmetry' and 'axis of symmetry' in Crystals.  
(b) Write a note on liquid crystals.  
(c) What is meant by tacticity of a polymer? How are polymers classified on the basis of tacticity?  
(d) If a polymer sample has population mass as :

10 molecules of molecular mass each	=	6000
20 molecules of molecular mass each	=	7000
20 molecules of molecular mass each	=	9000
25 molecules of molecular mass each	=	11000
20 molecules of molecular mass each	=	15000

Calculate the number average and weight average molecular masses of the polymer.

- (e) Explain the Poggendorff compensation method of measuring the EMF of a cell.  
(f) What are buffers? Explain the functioning of acid and basic buffers.  
(g) Briefly explain electrochemical corrosion.  
(h) Define BOD and COD. Explain the principles involved in their determination.

(8 × 5 = 40 marks)

Part B

- II. (a) (i) State and explain the laws of crystallography. (8 marks)  
(ii) Write a note on the applications of conductors. (7 marks)

Or

- (b) (i) Briefly outline the Debye-Scherrer method for determining the structure of a crystal. (7 marks)  
(ii) Outline the method of preparation of semiconductors. (8 marks)

Turn over

- III. (a) (i) Describe the free radical mechanism of polymerisation. (8 marks)  
(ii) How are polymers classified? (7 marks)

Or

- (b) (i) Explain the different mechanisms of lubrication. (8 marks)  
(ii) How are plastics fabricated? (7 marks)

- IV. (a) (i) Outline the principles and techniques of potentiometric titrations. (8 marks)  
(ii) Explain the functioning of a glass electrode. (7 marks)

Or

- (b) (i) Describe the functioning and application of a fuel cell. (7 marks)  
(ii) Derive the Henderson's equation for the calculation of pH of acidic and basic buffers. (8 marks)

- V. (a) (i) Write a brief note on inorganic coatings. (8 marks)  
(ii) Briefly outline the factors influencing corrosion. (7 marks)

Or

- (b) (i) Describe the methods of control of air pollution. (8 marks)