

B. Tech Degree III Semester Examination in Polymer Science and Rubber Technology, November 2008

PTF 1305 ORGANIC CHEMISTRY (2007 Admissions)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer **ANY FIVE** questions)
(All questions carry **EQUAL** marks)

(5 x 5 = 25)

- I. (a) Explain the differences between enantiomers and diastereomers, giving suitable examples.
- (b) Using resonance, compare the basic character of pyrrole and pyridine.
- (c) Explain Claisen rearrangement with a suitable example.
- (d) Describe the basic structural differences between starch and cellulose.
- (e) Explain zwitter ion property and peptide linkages.
- (f) Compare the stabilities of alkyl and aryl free radicals.
- (g) Explain the principle of thin layer chromatography.

PART B

(Answer **ANY FIVE** questions)
(All questions carry **EQUAL** marks)

(5 x 15 = 75)

- II. (a) Discuss various symmetry elements with suitable examples. (8)
- (b) Describe the optical isomerism present in lactic acid. (7)
- III. (a) Predict the major products formed when ethyl magnesium bromide is treated with
(i) water (ii) methanol (iii) oxirane, then H_3O^+ (iv) Benzaldehyde, then H_3O^+
(v) ethyl acetate, then H_3O^+ . (10)
- (b) How can you prepare butyl lithium? Predict the products when butyl lithium is treated with (i) CO_2 (ii) acetaldehyde. (5)
- IV. (a) Although fructose contains a keto group, it reduces Tollen's reagent. Explain. (5)
- (b) Differentiate between the following with suitable examples.
(i) A globular protein and a fibrous protein
(ii) Primary and secondary structures of proteins. (6)
- (c) What are lipids? What are their chief functions in living organisms? (4)
- V. (a) Compare the relative stabilities of alkyl carbocations with reasons. (5)
- (b) Explain the differences between electromeric and inductive effects. (5)
- (c) Describe any one molecular rearrangement involving carbocation with mechanism. (5)
- VI. (a) Write notes on the industrial applications of cellulose. (6)
- (b) Describe (i) Transcription (ii) Translation. (6)
- (c) What is a fatty acid? What are the main differences between oils and fats? (3)
- VII. Discuss the hybridization and orbital overlap in (i) Benzene (ii) Cyclohexane (iii) acetylene. (15)
- VIII. Write notes on :
(i) ion exchange chromatography (8)
(ii) gas chromatography (7)