

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2011**

CH 04 303—ORGANIC CHEMISTRY

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

- I. (a) Explain the difference between Electromeric and Inductive effects taking one suitable example in each case.
- (b) What is an active methylene group ? Give structures of three compounds having such a group.
- (c) Write a note on Strecker's method.
- (d) Why do aldoses give a positive Fehling's reagent test but a negative Schiff's reagent test ?
- (e) Discuss the mechanism of Friedel-Crafts alkylation reaction. What are its limitations ?
- (f) Write a note on Kolbe's reaction. $C_6H_5-ONa \xrightarrow{CO_2, 120-150^\circ C} C_6H_4(OH)COONa \xrightarrow{H_2O} C_6H_4(OH)COOH$
- (g) How is nicotine isolated from tobacco leaves ?
- (h) Describe briefly the synthesis and uses of aspirin.

(8 × 5 = 40 marks)

Part B

- II. (a) (i) Discuss Le Bell and Van't Hoff theory of optical isomerism with special reference to tartaric acid.

(7 marks)

- (ii) Explain briefly about Pinacol-Pinacolone rearrangement.

(8 marks)

Or

- (b) (i) In the Keto-enol tautomerism of Vinyl alcohol, the equilibrium gets shifted in favour of the Keto form.



(7 marks)



- (ii) Explain the existence of optically active lactic acid and the method of its separation from a racemic mixture.

(8 marks)

- III. (a) (i) Write a note on Sorensen's formal titration.

(7 marks)

- (ii) Explain the structural similarity and difference between Starch and Cellulose.

⑤ Nicotiana tobaccum, 0.6-0.7% leaves extracted with cold water, acidified, ether extract with hydrocarbon is removed, then made alkaline, free nicotine extracted with ether, b.p. 246°C.

Or

20% water soluble amylose 80% amylopectin → Maltose which is α-glycosidic
cellulose → cellobiose which β-glycosidic

Turn over

- (b) (i) How does mutarotation help us to understand the structure of fructose? (8 marks)
(ii) How do you prepare glycine by Gabriel's phthalimide synthesis? (7 marks)
- IV. (a) (i) Nitration of nitrobenzene yields *m*-dinitro benzene and not the *o*, *p* - isomer. Why? (7 marks)
(ii) Write down the synthesis of Malachite green. Give its uses. (8 marks)

Or

- (b) (i) Give an account of triphenylmethane dye. (8 marks)
(ii) How will you convert nitrobenzene to (1) Nitrosobenzene ; (2) Azo benzene ; and (3) Azoxy benzene ? (7 marks)
- V. (a) (i) Discuss briefly the mechanism of enzyme action. (7 marks)
(ii) How was the structure of geraniol established ? (8 marks)

Or

- (b) (i) Pyridine is stronger base than Pyrrole but a much weaker base than aliphatic amines. (7 marks)
(ii) Discuss the methods of preparation of sulphanilamide and Coumarine. (8 marks)

[4 × 15 = 60 marks]