

This question paper contains 3 printed pages]

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S. No. of Question Paper : 6016

Unique Paper Code : 217503

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Name of the Paper : CHHT-512 : Organic Chemistry-IV

Name of the Course : B.Sc. (Hons.) Chemistry

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer Six questions in all.

Question No. 1 carries 15 marks.

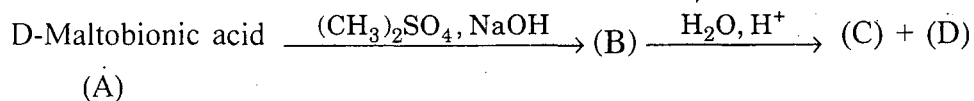
1. Answer any five parts :

- (a) Convert D-Glucose into D-Fructose.
- (b) Convert D-Arabinose into D-Glucose.
- (c) For amino acid Lysine $pK_1 = 2.2$, $pK_2 = 9.0$, $pK_3 = 10.5$ Calculate pI value. Give the structure of zwitter ion of Lysine.
- (d) Use FDNB to distinguish between Ala-Gly and Gly-Ala. Give the reactions involved.
- (e) Give the structure, numbering and name of an ω -3 fatty acid.
- (f) Explain ozonolysis products of Citral.
- (g) Give one synthesis of Guanine.

5×3=15

P.T.O.

2. (a) Complete the following sequence of reactions along with the structures, of compounds A to D. 8



- (b) How will you distinguish between D-glucose and 2-deoxy-D-Glucose by simple test ?
Give the mechanism of the reaction. 4

3. (a) An octapeptide (A), on treatment with Sanger's reagent followed by hydrolysis, gave DNP-Ala. Hydrazinolysis gave glycine as free acid, on treatment with chymotrypsin, the octapeptide gave.

- (i) a tripeptide containing Phe, Ser, Ala.
(ii) a tetrapeptide containing Gly, Arg, Val, Met.
(iii) Free tryptophan.

Trypsin treatment cleaves (A) into a dipeptide and a hexapeptide. CNBr treatment gives a pentapeptide and a tripeptide. Deduce the sequence of amino acids in (A).

- (b) Outline the solid phase synthesis of Gly-Ala-Phe.
(c) Complete the following reaction and give its mechanism :



4. (a) Why an electrophilic attack on pyrimidine ring takes place at position '5' of the ring ?
Explain.

- (b) Give *one* synthesis of Thymine.

- (c) Convert Urea into Uracil. 3 \times 4 = 12

5. (a) Define saponification value of an oil. Calculate the saponification value of a triglyceride whose molecular weight is 836.
- (b) What is rancidity ? How can it be prevented ?
- (c) (i) What is the difference between oil and fat ? Explain.
- (ii) What are saponifiable and non-saponifiable lipids ? Explain with an example.
- 3×4=12
6. (a) Convert α -Terpineol into Terebic acid.
- (b) What is 'Isoprene rule' and 'Special isoprene rule' ? Explain it with an example.
- (c) Give *one* synthesis of Citral from Methylheptenone.
- 3×4=12
7. (a) What is an antipyretic ? Give an example with its structure.
- (b) Give *one* preparation of chloroquine.
- (c) Write a short note on medicinal values of 'Neem'.
- 3×4=12
8. (a) Synthesize valine using Strecker synthesis.
- (b) Write short notes on :
- (i) Essential amino acids
- (ii) Cellulose.
- (c) Write the Fisher projection formulae of aldaric acids obtained by oxidation of D-Glucose and L-Glucose. How are these aldaric acids related ?
- 3×4=12