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Your Roll No. ....

917

**B.Sc. (Hons.)/III**

**C**

**CHEMISTRY—Paper XV**

**(Organic Chemistry—III)**

*Time : 3 Hours*

*Maximum Marks : 38*

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

Attempt six questions in all.

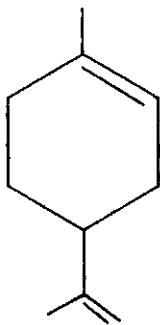
Question No. 1 is compulsory.

1. (a) Explain mutarotation.
- (b) What happens when amino acid is treated with ninhydrin ?  
Give the chemical equation involved.
- (c) What is invert sugar and why is it so named ?
- (d) How is DNA chemically different from RNA ?  $2 \times 4$
2. (a) A monosaccharide  $C_6H_{12}O_6$  is treated with methanol and hydrochloric acid. The resulting methylglycoside is treated with  $HIO_4$ . Only one mole of  $HIO_4$  is consumed and gives only one product. Identify the compound and justify through the reactions.

P.T.O.

- (b) An aldotetrose (A) undergoes Kiliani Fischer synthesis to give an aldopentoses (C) and (D). Compound (A) and (D) on oxidation with  $\text{HNO}_3$ , yield optically inactive dicarboxylic acids (B) and (F) respectively and compound (C) on oxidation gives an optically active dicarboxylic acid (E). Assuming the sugars belong to D-series, what are the structures of A, B, C, D, E and F ? Write the reaction involved in converting aldotetrose to aldopentoses. 2,4
3. (a) Total hydrolysis of a hexapeptide with 6M HCl gives Phe, Ala, Arg, Val. Edman's degradation of hexapeptide gave phenylalanine residue. Partial hydrolysis of the peptide gave the following fragments :
- Phe-arg-val + Phe-ala + Ala-phe-arg + Val-ala + Phe + Ala.
- Identify the hexapeptide.
- (b) For determining the structure of peptide, which is the better Edman's method or Dansyl chloride method. Why ?
- (c) What are essential amino acids ? Name any *two* essential amino acids and give their structure. 2,2,2

4. (a) What is the significance of Iodine value ? Calculate the Iodine number of Triolein (Mol.wt. = 884)
- (b) How are detergents classified ?
- (c) How are synthetic detergents better over neutral soaps as cleansing agents ? 2, 2, 2
5. (a) How can barbituric acid be converted to uric acid ?
- (b) Write the structure of the nucleotide Thymidine-5-monophosphate.
- (c) What is Isoprene rule ? Indicate the Isoprene units in the following compound :



2, 2, 2

6. (a) What happens when citral is treated with aqueous sodium carbonate ?
- (b) What is rancidity of fat ? Explain.
- (c) Using Diels-Alder reaction, synthesize Limonene. 2, 2, 2
7. (a) Explain mechanism of enzyme action.
- (b) An electrophilic attack on pyrimidine takes place at position-5 of the ring. Explain.
- (c) What are enzyme inhibitors ? Explain. 2, 2, 2
8. (a) What is alcoholic fermentation ? Explain.
- (b) Show the reactions of Glycolytic pathway for conversion of Glucose to Pyruvate. 2, 4