

[This question paper contains 4 printed pages.]

1253

Your Roll No.

B.Sc. (Hons.) / II

A

CHEMISTRY – Paper VIII

(Organic Chemistry – II)

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, including

Q. No. 1 which is compulsory and carries 8 marks.

1. A compound (A) C_3H_6O does not respond to Fehling's solution test. In presence of barium hydroxide, it forms a compound (B) $C_6H_{12}O_2$, which on dehydration yields a compound (C) $C_6H_{10}O$. The compound (C) on reaction with diethyl malonate in presence of sodium-ethoxide forms a compound (D) $C_{13}H_{22}O_5$, which reacts further with sodium ethoxide and gives a cyclic product (E) $C_{11}H_{16}O_4$, which yields 5,5 dimethyl cyclohexane-1,3 dione on hydrolysis. Identify (A) to (E). Write the complete reaction mentioning at least two important "Name Reactions" involved. (8)
2. How will you synthesise the following :
 - (i) m-Bromo aniline from benzoic acid

P.T.O.

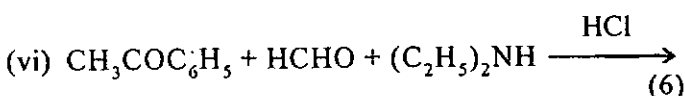
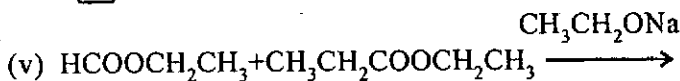
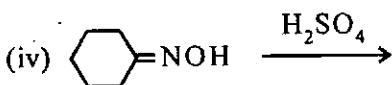
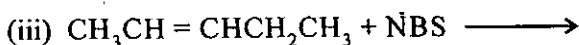
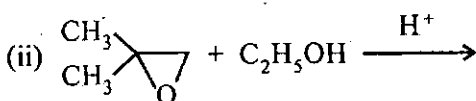
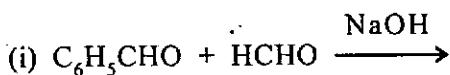
(ii) 1,2,3 Tribromo benzene from p-nitro aniline

(iii) p-Dinitrobenzene from benzene

(iv) 3-Methyl-hept-3-ene from butanone

(1½, 1½, 1½, 1½)

3. Complete the following reactions :-

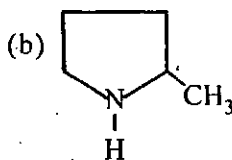
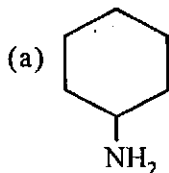


4. Explain the following -

(i) Carboxylic acids do not form oximes even though they have a $>C=O$ group.

(ii) Williamson's synthesis of tert. butyl ethyl ether using tert. butyl bromide and sodium ethoxide is not a good synthesis.

- (iii) 3,3-Dimethyl butan-2-one can not be synthesised from ethyl acetoacetate.
- (iv) Treatment of benzaldehyde with HCN produces a mixture of two isomers that can not be separated even by very careful fractional distillation. $(1\frac{1}{2}, 1\frac{1}{2}, 1\frac{1}{2}, 1\frac{1}{2})$
5. How will you synthesise the following from Ethyl Aceto Acetate (EAA) or Di Ethyl Malonate (DEM) ?
- Succinic acid
 - Ethyl-4-keto-3-methyl pentanoate
 - Barbital
 - Crotonic acid $(1\frac{1}{2}, 1\frac{1}{2}, 1\frac{1}{2}, 1\frac{1}{2})$
6. (i) Indicate the products of exhaustive methylation followed by Hoffman elimination in the following compounds -



- (ii) Draw the possible chair conformational structures for cis and trans 1,3-dimethyl cyclohexane. Determine which of the isomers is chiral. $(3,3)$

7. (i) Compound A ($C_5H_8O_2$) liberated carbon dioxide from sodium hydrogen carbonate. It existed in two forms, neither of which was optically active. On hydrogenation it yielded $C_5H_{10}O_2$, which could be resolved into enantiomers. Suggest the structure for A. Give IUPAC names of both the isomers.
- (ii) Write the structural formula of (S)(E)-2-Chloro-3-heptene. (4,2)
8. Write short notes on :-
- (i) Benzoin condensation
- (ii) Hinsberg method of separation of amines
- (iii) Reformatsky reaction (2,2,2)