

This question paper contains 3 printed pages.]

Your Roll No. ....

**5104**

**B.Sc. (Prog.) / II B**

**CH-202 – ORGANIC CHEMISTRY**

**(Admissions of 2008 & onwards)**

**Time : 2 Hours**

**Maximum Marks : 50**

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

Attempt any **four** questions.


Question No. 1 carries **14** marks.

1. (a) An organic compound having molecular formula  $C_5H_{10}O$  exists in two chain isomers (A) and (B). On treatment with NaOH, isomer (A) gives 2, 2-dimethylpropanoic acid and 2, 2-dimethylpropan-1-ol while isomer (B) gives 3-hydroxy-2-propyl-heptanal. Deduce the structures of (A) and (B). Also give the names and mechanisms of the reactions involved.

- (b) Give the major products obtained when :
- 2-chlorobutane is treated with alcoholic KOH.
  - t-butyl methyl ether is treated with HI.
- (c) How will you obtain 1-propanol and 2-propanol from propene ? (6, 4, 4)

2. Explain the following :

- Nitrobenzene but not benzene is used as a solvent in alkylation of bromobenzene.
- Halogens are ortho-para directors but are deactivating.
- Aryl halides undergo nucleophilic substitution with difficulty. (4 × 3)

3. (a) Give the major products obtained when   $\text{CH}=\text{CH}-\text{CH}_3$  is treated with HBr in presence and in absence of peroxides.

Explain giving mechanisms.

- Give the products of the reaction of benzene sulphonic acid with
  - aq. NaOH
  - Conc.  $\text{HNO}_3$  + Conc.  $\text{H}_2\text{SO}_4$ .

- (c) Give the products obtained when glycerol is treated with  $\text{HIO}_4$ . (6, 4, 2)
4. (a) What are the evidences that ethylacetoacetate exists in two isomeric forms ? What type of isomerism is this ?
- (b) Starting from EAA, how will you prepare :
- (i) Adipic acid ?
  - (ii) Pentan-2, 4-dione ?
  - (iii) 4-methyl uracil ? (6, 6)
5. Explain :
- (a) When treated with sodium amide in presence of liquid ammonia, both O - and m-methoxychlorobenzene yield m-methoxyaniline.
- (b) Discuss Hofmann-bromamide reaction on amides. (6, 6)
6. (a) Compare  $\text{SN}^1$  and  $\text{SN}^2$  reaction mechanisms involving alkyl halides.
- (b) Give the products of reduction of nitrobenzene in acidic, neutral and basic medium. (6, 6)
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