

B.Sc. Biotechnology 1st Semester

ORGANIC CHEMISTRY—A

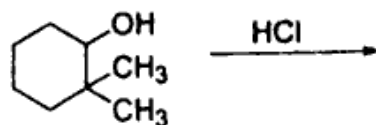
Paper—BT-4

Time Allowed—3 Hours] [Maximum Marks—40

Note :— Attempt *five* questions, selecting at least *one* question from each section. The *fifth* question may be attempted from any section.

SECTION—A

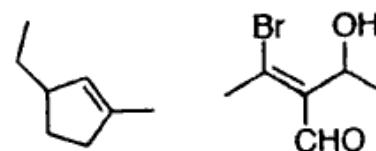
1. (a) Draw potential energy diagram from various conformation of Cyclohexane and discuss their relative stabilities. 4
- (b) Discuss the stability of tri-phenylmethyl carbocation. 4
2. (a) Draw all the conformational isomers (cis- and trans) of 1, 2-dimethyl Cyclohexane and arrange them in order of their increasing stability. 2
- (b) What are the various evidences in support of free radical mechanism for halogenations of alkanes ? 3
- (c) Complete the following reaction with a suitable mechanism :



3

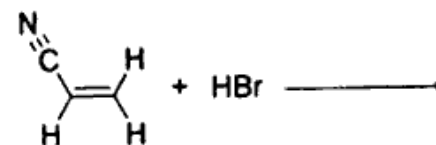
SECTION—B

3. (a) Assign E/Z configurations to the following alkenes and justify :



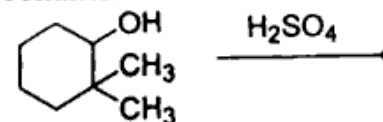
4

- (b) Complete the following reaction and give a suitable mechanism :



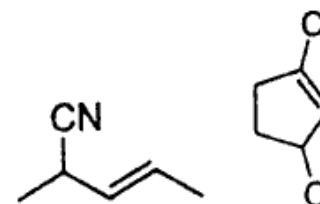
2

- (c) Complete the following reaction and give a suitable mechanism :



2

4. (a) Assign E/Z configurations to the following alkenes :

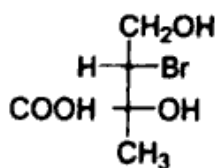


4

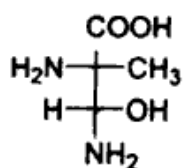
- (b) Trans-1-bromo-3-tert-butyl cyclohexane undergoes elimination in the presence of a base more readily than the corresponding cis-isomer, why ? 4

SECTION—C

5. (a) Assign R/S configuration to the following compounds :



I

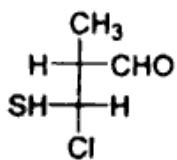


II

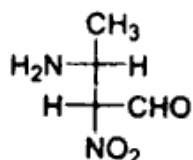
4

- (b) Enlist various differences between internal compensation and external compensation. 4

6. (a) Assign R/S configuration to the following compounds :



I



II

4

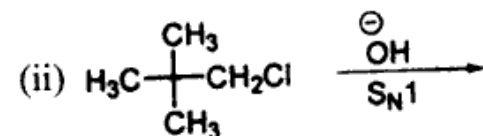
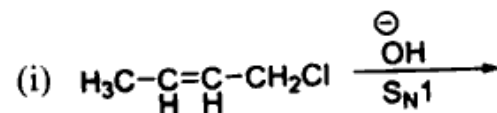
- (b) Dissymmetry is an important condition for optical activity. Explain. <http://www.gnduonline.com> 4

SECTION—D

7. (a) Giving a suitable example, justify the fact that "*S_N1* reaction proceeds with partial racemization". 4

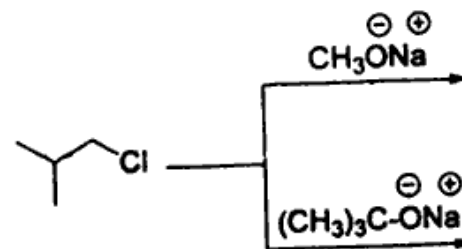
- (b) Out of chlorobenzene and benzyl chloride, which one would be more reactive towards nucleophilic substitution reaction and why ? 4

8. (a) Complete the following reactions with suitable mechanism and justify your answer :



2+2

- (b) Complete the following reactions with suitable mechanism and justify your answer :



4

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