

(i) Printed Pages :4]

Roll No.

(ii) Questions :9]

Sub. Code :

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B.A./B.Sc.(General) 2nd Semester 1046

CHEMISTRY

(Same for B.Sc. Microbiol & Food tech.)

Paper - VI : Organic Chemistry-B

Time : 3 Hours]

[Max. Marks : 22

Note :- Attempt **five** questions in all, selecting **one** Question from each section. Question No. **IX** is compulsory.

SECTION-I

- I. (a) Describe Sacke-Mohr theory of strainless rings. How does it account for the stability of cycloalkanes containing six or more carbon atoms
- (b) Discuss the mechanism of chlorination of methane. Give two evidences in support of this mechanism. 2,2
- II. (a) Halogenation of alkanes in presence of tetraethyl lead proceeds at a lower temperature than when it is done in its absence, explain.
- (b) Cyclopropane and cyclobutane undergo addition reactions while higher cycloalkanes do not. Why?
- (c) What are isomers of Pentane? Give their IUPAC names. Which isomer has highest b.p. and why? 1,1,2

SECTION-II

- III. (a) How does ozonolysis help in locating the position of double Bond in alkenes? Explain with two examples.
- (b) Discuss mechanism of anti—Markownikov's rule of addition Of HBr to unsymmetrical alkenes. 2,2
- IV. (a) Complete the reactions:
- (i) Cyclohexene + Perbenzoic acid \rightarrow
- (ii) Cyclopentene + $\text{Br}_2 / \text{CCl}_4 \rightarrow$
- (b) Discuss the S_{N}^1 mechanism Of dehydration Of alcohols alkenes.
- (c) Explain, why addition of chlorine to propene at ordinary temperature gives 1,2-dichloropropane but at 773K, it gives 3-chloropropane. 1,1,2

SECTION-III

- V. (a) Explain the orbital structure and resonance structure of 1,3-Butadiene.
- (b) Write the major product and suggest suitable mechanism for the following reactions.
- $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH} + \text{HBr} \begin{cases} \xrightarrow{193\text{K}} ? \\ \xrightarrow{313\text{K}} ? \end{cases}$ 2,2
- VI. (a) Give chemical 6(Nations for the following reactions 2
- (i) Reduction of But-2-yne with $\text{H}_2 \text{ Pd}/\text{BaSO}_4$
- (ii) Reduction of But-2-yne with $\text{Na}/\text{liq NH}_3$
- (b) How will you explain that alkynes undergo nucleophilic addition reactions but alkenes do not?

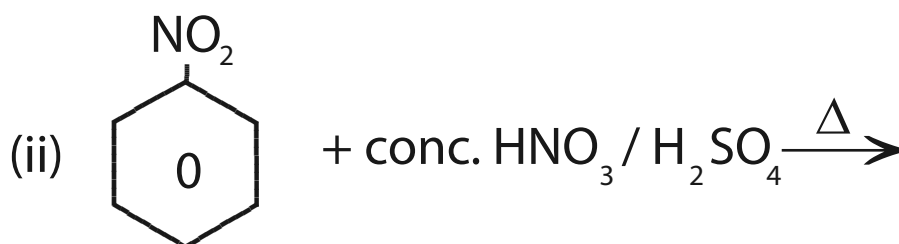
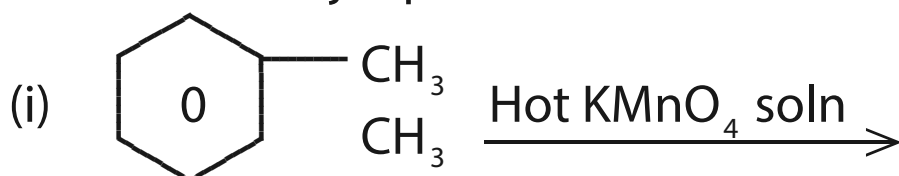
- (c) How will you prepare a higher alkyne from a lower alkyne?
1,1,2

SECTION-IV

- VII. (a) Discuss the Kekulé structures of benzene and also give objections to these structures.
(b) Give the mechanism of Friedel-Craft's acylation reaction.

2,2

- VII. (a) Nitration of benzene takes place readily than that of nitrobenzene. Explain.
(b) Predict the major product of the following reactions



- (c) Give one method of formation of phenyl acetylene and one method of formation of biphenyl.
1,1,2

SECTION-V

(Compulsory Question)

- IX. (a) Free radical chlorination of alkenes is not a good method for the preparation of alkyl halides yet neopentyl chloride is generally prepared by free radical chlorination of neopentane.
(b) Out of cis-2-butene and trans-2-butene, which has more m.p. and why?

- (c) Penta 1,3-diene is more stable than penta 1,4-diene
Why?
- (d) Though benzene is an unsaturated hydrocarbon, yet it fails to give Baeyer's Test. Why?
- (e) What are terminal alkynes and non-terminal alkynes? Give examples.
- (f) Why in case of ortho and para disubstitution, the para isomer generally dominates? 6x1=6