

ORGANIC CHEMISTRY
(Common for B.Sc., B.Sc. Bio Tech., B.Sc. Industrial
Microbiology, Semester-II) Paper – II

Time Allowed : Three Hours]

Maximum Marks : 35

Note : The candidates are required to attempt *two* questions each from Section A and B carrying 7 marks each and the entire Section C consisting of 5 short answer type questions carrying 1½ marks each.

Section : A

1. (a) What is aromaticity and what is the theoretical requirement of aromatic character ? Explain with examples.
(b) During aromatic electrophilic substitution reactions of benzene, formation of σ and π complexes take place, explain.
2. (c) Which product(s) is/are found upon Friedel-Craft's Acylation reaction of benzene. 3,3,1
(a) Give the mechanism of sulphonation reaction of benzene.
(b) What is the effect of different substituents upon the reactivity of benzene ring towards disubstitution reactions ?
- (c) **Figure** $\xrightarrow[\text{NH}_3, \text{C}_2\text{H}_5\text{OH}]{\text{Na}}$? 3,3,1
3. (a) Give the mechanism of formation of alenes from alcohols.
(b) What is peroxide effect ? Give the mechanism of this reaction.
- (c) State Markownikoff's rule.
4. (a) What products are formed upon oxymercuration-demercuration of alkenes ? Give mechanism of the reaction. 3,3,1
(b) What do you understand by Acrylic halogenations of alkenes ? Explain.
(c) which products are formed upon hydroxylation of cyclopentene ? 3,3,1

- Section : B**
5. (a) What are allenes ? Give their structure.
 - (b) Discuss the effect of temperature on addition reaction of HBr to conjugated dienes.
 - (c) What do you mean by (4 + 2) cyclo-addition reaction ? 3,3,1
 6. (a) Under what condition water gets added to alkynes ? Give the mechanism of reaction also.
 - (b) Explain the causes of acidity of alkynes.
 - (c) Which one is more reactive towards electrophilic substitution reactions – alkenes or alkynes ? 3,3,1
 7. (a) What do you mean by S_N1 reactions ? Give its mechanism.
 - (b) Discuss the stereochemical aspects of S_N2 reactions.
 - (c) What is the relative reactivity of alkyl halides upon comparison with vinyl halides towards nucleophilic substitution reaction ? 3,3,1
 8. (a) Give the mechanism of Elimination-addition reaction of aryl halides.
 - (b) Explain for the low reactivity of chlorobenzene towards electrophilic substitution reactions.
 - (c) What is the evidence of benzyne formation ? Give one example. 3,3,1
- Section : C**
(Compulsory)
9. Write brief on the following :
 - (i) Why HBR and not HCl or HI shows peroxide effect upon its reaction with alkenes ?
 - (ii) Discuss briefly what are Diels-Alder reactions.
 - (iii) Give one method for the preparation of toluene.
 - (iv) Give different conditions and hence difference products formed, upon reaction of alkenes with H_2SO_4 .
 - (v) What is Regioselectivity ? 1½, 1½, 1½, 1½