

R-2

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**B. Sc. (Bio-Technology) 2nd Sem.
(New Scheme) Examination – May, 2016**

ORGANIC CHEMISTRY

Paper : BT-207

Time : Three Hours]

[Maximum Marks : 40

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting at least one question from each Section. Question No. 1 is compulsory.

1. (a) What is Baeyer's test ?
- (b) Why Nitrobenzene is used as a solvent Friedel-Crafts reactions ?
- (c) Do alkynes exhibit geometrical isomerism ? Give reasons for your answer.
- (d) Why allyl halides are more reactive than primary alkyl halide ? 2 × 4

SECTION - A

2. (a) Discuss the mechanism of Dehydration of alcohols. 3
- (b) What happens, when isobutylene reacts with : 3
- (i) Chlorine water
- (ii) HBr
- (c) Why melting point of trans-But-2-ene is higher than that of Cis But-2-ene ? 2
3. (a) Convert the following : 3
- (i) Ethene into methanal
- (ii) But-2-ene to acetaldehyde
- (b) Give mechanism of oxymercuration reduction of alkenes. 3
- (c) Why peroxide effect is shown by HBr and not HCl or HI ? 2

SECTION - B

4. (a) Define and explain Huckel's rule for aromaticity with suitable examples. 4

(b) Explain m-directing nature of nitro group in benzene ring. 4

5. (a) Discuss the mechanism of electrophilic substitution in the benzene ring with reference to :
(i) Halogenation (ii) Sulphonation 6

Also give the energy profile diagram.

(b) Write the chemical equations for the following : 2

(i) Benzene reacts with conc. HNO_3 in the presence of conc. H_2SO_4 at 30°C .

(ii) Chlorobenzene undergoes F.C. acetylation.

SECTION - C

6. (a) What are dienes ? How are they classified ? Give one example of each type. 3

(b) Write a short note on Diel's Alder reaction of conjugated dienes. 3

(c) Give IUPAC name of the following : 2

(i) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH} = \text{CH}_2$

(ii) $\text{HC} \equiv \text{C} - \text{CH} = \text{CH} - \text{CH} = \text{CH}_2$

7. (a) How will you prepare ethyne from : 3

(i) Calcium carbide

(ii) Kolbe's electrolytic process

- (b) Convert : 3
- (i) Acetylene to Acetaldehyde
 - (ii) Acetylene to methyl vinyl ether
- (c) What are the products of ozonolysis of acetylene ?
Suggest an appropriate mechanism of its formation. 2

SECTION - D

8. (a) Give any *three* methods of preparation of alkyl halides. 3
- (b) Discuss the mechanism with energy profile diagram of SN^1 reactions in alkyl halides. 5
9. (a) Discuss the bimolecular mechanism of nucleophilic aromatic substitution of tryl halides ?
Give evidence in support. 4
- (b) Write equations for : 4
- (i) Ullman Synthesis
 - (ii) Gattermann Reaction
 - (iii) Balz-Schiemann Reaction
 - (iv) Wurtz-Fittig Reaction