

Roll No. : .....

Total No. of Questions : 11 ]

[ Total No. of Printed Pages : 4

# BPP-1079

M.Sc. (Previous) Examination, 2022

## CHEMISTRY

Paper - II

(CH-402)

(Organic Chemistry)

Time : 3 Hours ]

[ Maximum Marks : 75

### Section-A

(Marks : 2 × 10 = 20)

*Note* :- Answer all *ten* questions (Answer limit 50 words). Each question carries 2 marks.

### Section-B

(Marks : 5 × 5 = 25)

*Note* :- Answer all *five* questions. Each question has internal choice (Answer limit 200 words). Each question carries 5 marks.

### Section-C

(Marks : 10 × 3 = 30)

*Note* :- Answer any *three* questions out of five (Answer limit 500 words). Each question carries 10 marks.

### Section-A

2 each

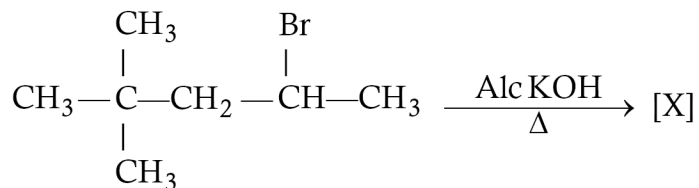
- (i) Define and explain even alternant hydrocarbons with one example.
- (ii) Explain conformation of sugars and their stability.

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- (iii) What is the difference between transition state and intermediate ?
- (iv) What are ambident nucleophiles ?
- (v) What is Ortho/Para Ratio ?
- (vi) Write the product of bromination of 1-butene with NBS and indicate the major product.
- (vii) Arrange reactivity of given compounds in decreasing order for electrophilic addition reaction with HX :
- (a)  $\text{C}_6\text{H}_5\text{—CH} = \text{CH}_2$
- (b)  $\text{C}_6\text{H}_5\text{—C} = \text{CH—CH}_3$   
 $\quad\quad\quad |$   
 $\quad\quad\quad \text{CH}_3$
- (c)  $\text{C}_6\text{H}_5\text{—C} = \text{CH—CH}_3$   
 $\quad\quad\quad |$   
 $\quad\quad\quad \text{C}_6\text{H}_5$
- (d)  $\text{CH}_2 = \text{CH—NO}_2$
- (viii) Explain crossed aldol reaction with one suitable example.
- (ix) In the given reaction :



What will be 'X' ?

- (x) What are pericyclic reactions ? Explain briefly classification of pericyclic reaction.

**Section-B**

5 each

2. Explain the conformational analysis of 1, 2-, 1, 3- and 1, 4- dimethylcyclohexane.

*Or*

Explain stereochemistry of Allenes and Spiranes.

3. What do you understand by thermodynamically and kinetically controlled reaction ? Explain with suitable example and draw energy profile diagram.

*Or*

What do you understand by nucleophilic substitution reaction ? Explain SN reaction at an Allylic carbon and Vinylic carbon.

4. Describe Arenium ion mechanism of aromatic electrophilic substitution.

*Or*

What is ArSN Reaction ? Explain the mechanism of ArSN1 and ArSN2 with suitable examples.

5. Explain Regioselectivity in carbon-carbon double bond by taking suitable example.

*Or*

Describe Perkin reaction mechanism with suitable example.

6. Compare E1, E2 and E1cb reactions.

*Or*

Explain stereochemistry of electrocyclic reactions with examples.

**Section-C**

7. (a) Explain optical activity in the absence of a chiral carbon taking example of Biphenyls.

(b) What are crown-ether complexes and cryptand complexes ? 5,5

8. Write notes on the following :
- (a) Carbenes
  - (b) Carbocations
  - (c) Phase transfer catalysis
  - (d) The SET mechanism 2½×4=10
9. Explain orientation and reactivity in monosubstituted benzene undergoes an electrophilic substitution. 10
10. Describe the mechanism of the following :
- (a) Hydroboration
  - (b) Addition to cyclopropane ring
  - (c) Mannich reaction
  - (d) Benzoin condensation 2½×4=10
11. (a) What are sigmatropic rearrangement ? Explain with example.
- (b) Discuss the mechanism and orientation in pyrolytic elimination. 5,5