

Attempt **FIVE** Questions in all. **Section-A** is **Compulsory**. Select **TWO** Questions from **Section-B** and **TWO** Questions from **Section-C**.

SECTION-A

1. Write short answers of any SIX.

6

- Explain why ∇^{\oplus} is more stable than $^{\oplus}\text{CH}_2 - \text{CH} = \text{CH}_2$
- $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \ddot{\text{N}}\text{H}_2$ is a weaker base than $\text{CH}_3 - \ddot{\text{N}}\text{H}_2$, why?
- Phenol is stronger acid than ethanol, why?
- What is inductive effect?
- What is hyper conjugation?
- Why chloro acetic acid is stronger acid than acetic acid?
- What are optical isomers?

SECTION-B

2. a) Give all steps involved when chlorine is reacted with CH_4 in presence of light.

2

b) Give preparation of an alkene through

2, 2, 2

i) Ghugaer reaction

ii) Cope reaction

iii) Wittig reaction

Give reaction mechanisms also

3. a) Draw and discuss the structure of Benzene under molecular orbital theory.

4

b) Aniline on reaction with $\text{CH}_3 - \text{Cl}$ in presence of AlCl_3 give ortho and para products but nitro benzene on reaction with same give meta products. Why?

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4. a) Define: i) Chirality ii) Optical activity

1, 1

b) Explain the following terms with examples:

2, 2, 2

i) Racemization

ii) Diastereoisomers

iii) Dextrorotatory compounds

5. a) i) Give Perkin reaction to prepare a cycloalkane.

ii) How can you prepare an alkene through dehydro halogenation?

2, 2

b) i) How can you prepare cycloalkane through Diel-Alder reaction.

2, 2

ii) How can you differentiate between an alkene and alkane? Give two chemical tests.

SECTION-C

6. a) i) Give Lucas test to distinguish primary, secondary and tertiary alcohols.

2, 2

ii) Why phenol behaves acidic on dissolving in water.

b) Give at least four (4) differences between SN_1 and SN_2 reactions.

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7. a) How can you prepare? Give reactions only

4

i) Benzene from Phenol

ii) Phenol from Benzene

iii) Picric Acid from Phenol

iv) Tri bromophenol from Phenol

b) Give Reimer-Tiemann's reaction to prepare salicylaldehyde from phenol. Give reaction mechanism also.

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8. a) Give major organic product formed by the reaction of n-propylbromide with the following:

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i) Mg, ether

ii) NaOH (aqueous)

iii) KOH (alcoholic)

iv) NaCN

b) How can you convert: i) I-butene to I-bromo butane

ii) I-bromo butane to 2-butene

4

iii) Benzene into Nitrobenzene

iv) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ into $\text{CH}_3 - \text{CH}_2\text{CH}_2\text{CN}$

9. a) How can you prepare an aldol from acetaldehyde using base as catalyst? Give reaction mechanism also.

4

b) Give formation of Ethyl acetate from acetic acid and Ethanol. Give reaction mechanism also.

4