

92239

B.Sc. (Hons.) 4th Semester Examination,

May-2024

CHEMISTRY

Paper-P-25

Organic Chemistry CH(H)-208

Time allowed : 3 hours ]

[ Maximum marks : 40

Note : Attempt five questions in all, selecting one question from each section. Question Number 1 is compulsory.

1. (a) Which factor affects intensity of absorption band in IR Spectrum? (1)
- (b) What are coupling peaks?
- (c) How strength of base is related to pK<sub>b</sub> values? (1)
- (d) Give IUPAC name of  $\text{C}_2\text{H}_5-\overset{\text{H}}{\underset{\text{CH}_3}{\text{N}}}-\text{CH}(\text{-CH}_2)_2-\text{CH}_3$
- (e) Complete the reaction
- $$\text{C}_6\text{H}_5\text{N}_2\text{Cl} \xrightarrow{\text{SnCl}_2/\text{HCl}}$$
- (f) How many  $\alpha$ -hydrogen are present in tertiary nitroalkanes? (1)

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(2)

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- (g) Why formaldehyde does not give aldol condensation? (1)
- (h) How will you distinguish between aliphatic aldehyde and aromatic aldehyde? (1)  $\times 8 = 8$

## Section-A

2. (a) Define IR spectroscopy. Discuss various molecular vibrations in this technique. 4
3. (b) What do you mean by finger print region? Explain giving examples. 4
3. (a) How does Inductive Effect affect absorption frequencies of functional group in IR spectroscopy? Explain with example. 4
- (b) Indicate the expected important absorption region in IR Spectra of (i) Isopropyl alcohol (ii) Toluene. 4

## Section-B

4. (a) Using Hinsberg reagent, How will you distinguish aliphatic primary, secondary and tertiary amines? Explain with reaction. 4

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(b) How will you bring about following conversions?

- (i) Ethaneamine, into methanamide  
 (ii) Aniline into benzamide 4

5. (a) Write short notes on

- (i) Hoffmann Bromamide Reaction 5  
 (ii) Gabriel phthalimide reaction

(b) Aromatic amines are less basic than aliphatic amines? Explain 3

### Section-C

6. (a) Give synthesis and mechanism of diazotisation. 4

(b) Write reactions when benzene diazonium chloride reacts with

- (i)  $\text{CuCl}/\text{HCl}$  (ii) Phenol (iii)  $\text{H}_3\text{PO}_2/\text{Cu}^+$   
 (iv) N-methylaniline. 4

7. (a) Why does nitrobenzene undergo electrophilic substitution reaction at m-position? Explain. 4

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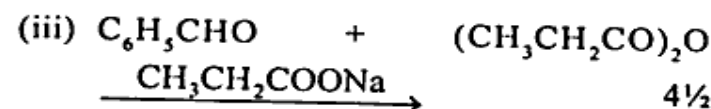
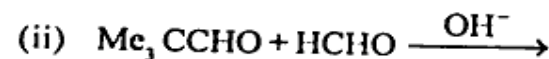
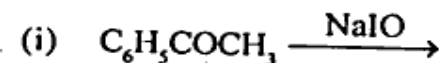
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(b) Discuss the reduction of nitrobenzene under following condition:

- (i) Acidic Medium (ii) Catalytic reduction  
 (iii) Selective reduction. 4

### Section-D

8. (a) Complete the following reaction and mention the name of reaction involved



(b) Explain the mechanism of Wittig reaction. 3½

9. (a) Explain why: 4

(i)  $\alpha$ -H of carbonyl compounds are acidic while  $\beta$ -H atom is not? 3

(ii) Ketones are less reactive than aldehydes?

(b) Explain advantage of oxidation of alcohols with

- (i) Sarett reagent (ii) PCC (iii) Pyridinium dichromate. 4

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