

Roll No.

(05/16-I)

5214

B. Sc. EXAMINATION

(For Batch 2011 to 2012 Only)

(Fourth Semester)

CHEMISTRY

CH-206

Organic Chemistry

Time : Three Hours

Maximum Marks : 27

Note : Attempt *Five* questions in all, selecting at least *two* questions from each Section. Q. No. 1 is compulsory.

1. (i) What is the range of infrared radiations covered in the infrared spectrophotometer ? 1
- (ii) Deduce the number of fundamental vibrations possible in CO₂. 1
- (iii) Why sulphanilic acid exist as Zwitterion ? 1

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- (iv) Arrange the following in the increasing order of their basicities :
 - (a) C₆H₅NH₂
 - (b) (m) NO₂-C₆H₄-NH₂
 - (c) (p) NO₂-C₆H₄-NH₂
 - (d) (o) NO₂-C₆H₄-NH₂ 1
- (v) How will you convert Nitrobenzene into parabrome aniline ? 1
- (vi) What is Corey's reagent ? What is it used for ? 1
- (vii) What type of aldehydes undergo Aldol condensation ? 1

Section A

2. (a) A compound with molecular formula C₃H₈O shows strong absorption in the region 2960-2850 cm⁻¹ and 1300-1000 cm⁻¹. Give its possible structure. 1
- (b) Why Phenyl acetate absorbs at a higher frequency than methyl benzoate ? 1

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- (c) Explain the use of IR spectroscopy to distinguish between inter and intra molecular H-bonding. 2
3. (a) How would IR spectra of the following pairs of compounds differ ? 2
- (i) CH_3COCH_3 and $\text{CH}_3\text{CH}_2\text{CHO}$
- (ii) $\text{CH}_3\text{CH}_2\text{COOH}$ and $\text{CH}_3\text{COOCH}_3$
- (b) How would you distinguish between cis and trans 2-Butane ? 1
- (c) Starting from aniline how will you obtain.
- (i) Sulphanilic acid
- (ii) Peranitroaniline. 2
4. (a) How will you separate a mixture of 1°, 2° and 3° amines using diethyl oxalate ? 20
- (b) Compare the behaviour of aniline, N-methylaniline and N,N-dimethyl aniline towards $\text{NaNO}_2 + \text{HCl}$. 2

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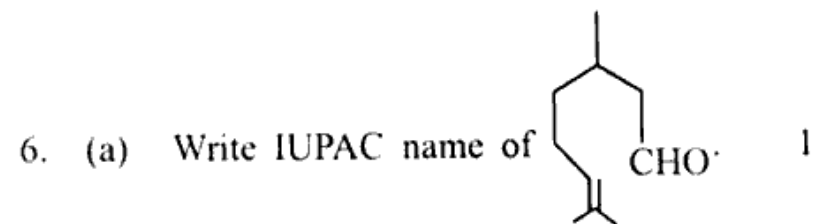
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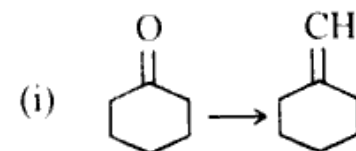
- (c) Aromatic amines are weaker basis than aliphatic amines explain. 1

Section B

5. (a) What is Diazotisation ? Discuss its mechanism ? 3
- (b) Starting from benzene diazonium chloride. How will you prepare the following compound ? 2
- (i) Benzene
- (ii) Fluro Benzene
- (iii) Nitro Benzene
- (iv) Phenol.

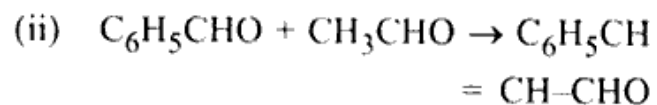


- (b) Suggest the mechanism of the following conversions : 3



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- (c) Why pyridinium chloro chromate oxidation of alcohols stops reaction at aldehyde stage ? 1
7. (a) Why oxidation of 1° alcohols generally gives poor yield of aldehyde than oxidation of 2° alcohols gives ketones ? 2
- (b) Aldehydes undergo nucleophilic addition reaction more readily than ketones. Why ? 1
- (c) What is Cannizzaro reaction ? Discuss its mechanism. 2