

CS/2119

SERIAL NO. 1
P.C.S. COPY

5232/NH

Total No. of Sheets ~~1~~ 2Total No. of Questions ~~5~~ 6Subject ~~CS~~ PaperTitle of the Paper Organic ChemistryTime allowed 03 Hours Maximum Marks 26 Minimum Pass Marks ~~10~~

Note: The candidates are required to attempt ^{two} ~~one~~ question each from Section A, B, ~~C~~ and ~~D~~ carrying 04 marks each and the entire Section C consisting of 05 short answer type questions carrying 02 marks each.

Please assign marks to each question

Note: The candidates are required to attempt five questions selecting two questions from each of A and B sections and section C is compulsory.

Section A

- I. (a) Discuss various electronic excitations possible in an organic compound.
(b) Discuss effect of conjugation on λ_{\max} . (2,2)
- II. (a) Discuss Beer-Lambert's law of absorption.
(b) Explain effect of solvent over $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ transitions. (2,2)
- III. (a) What is TMS, why it used a standard in NMR spectra.
(b) Predict the number of signals and splitting pattern of each signal in NMR spectrum of:
i. $\text{CH}_3\text{-O-CH}_3$ ii. $\text{CH}_3\text{-O-CH}_2\text{-CH}_3$ (2,2)
- IV. (a) An organic compound having molecular formula $\text{C}_4\text{H}_8\text{O}$ gives spectroscopic data:
UV- $\lambda_{\max} = 275 \text{ nm}$
IR- $2941\text{-}2857 \text{ (m)}, 1715 \text{ (s)}, 1460 \text{ (m)} \text{ cm}^{-1}$
1H-NMR- (δ 2.45, quartet, 2H), (δ 2.18, singlet, 3H), (δ 1.07, triplet, 3H)
Determine the structure of compound. (4)

Section B

- V. (a) Discuss stretching and bending vibrations possible in organic compound.
(b) Give mathematical expression for Hook's law. (3,1)
- (a) What is the effect of H-bonding on vibrational frequencies ⁱⁿ during IR spectrum of organic compounds.
- VI. (b) Discuss reaction of n-Butyllithium with aldehyde and ketones. (2,2)
- VII. (a) Complete following reactions:
i. $\text{RMgX} + \frac{1}{2} \text{O}_2 \xrightarrow{\text{H}^+/\text{H}_2\text{O}}$
ii. $\text{RMgX} + \text{S} \xrightarrow{\text{H}^+/\text{H}_2\text{O}}$
(b) Give methods of preparation of thiol compounds and their reactions. (2,2)
- VIII. (a) Discuss the structure of thiols.
(b) Describe preparation and important reactions of aromatic sulphonic acids. (2,2)

Contd ... 2

Section C

- IX. (a) Define terms chromophore and hypochromic effects.
(b) What will be position of IR absorption band for carbon-carbon triple bond in acetylene.
(c) Define chemical shift.
(d) Give method of preparation of Grignard reagent.
(e) Why carbon doesnot form stable double bond with sulphur.

(2x5=10)

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