

Roll No.

Total Pages : 04

GSM/J-21

1624

CHEMISTRY

Paper XIII (CH-206)

Organic Chemistry (Theory)

Time : Three Hours]

[Maximum Marks : 32

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.
Attempt *two* questions each from Section A and
Section B.

1. Attempt any *eight* of the following :
- Name the units in which absorption bands are expressed in IR spectroscopy ?
 - Mention any *two* solvents used in IR spectroscopy.
 - Among primary, secondary and tertiary amines which cannot form intermolecular hydrogen bond.
 - Give IUPAC name of Triethyl amine.
 - Write Blomstrand formula and its modified form for benzene diazonium chloride.
 - Write *two* evidences in support of Blomstrand formula of benzene diazonium chloride.

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- (g) Give the type of hybridization of carbon atom in carbonyl group.
- (h) What is the necessary condition for aldol condensation in aldehydes and ketones ?
- (i) Prepare CH_3CHO from CH_3COCl . **8×1=8**

Section A

- 2.
 - (a) Define scissoring and rocking vibrations.
 - (b) Define and explain Hooke's law for calculation of vibrational frequency.
 - (c) Calculate number of fundamental absorption bands in CO_2 molecule. **3×2=6**
- 3.
 - (a) Define overtones and coupling peaks in IR spectroscopy.
 - (b) What is the effect of resonance and inductive effect on vibrational frequency of a group ?
 - (c) Oxidation of 2-Propanol to 2-Propanone is being carried out. How will you study the progress of reaction by IR spectrum ? **3×2=6**
- 4.
 - (a) How will you prepare primary amines by Gabriel Phthalimide reaction ?

(b) Give method of separation of pri., sec. and tert. amines by Hofmann's method.

(c) Compare basic characters of ethyl amine and aniline.

3×2=6

5. (a) Convert Aniline into *p*-Nitroaniline.

(b) Write reaction of pri. aliphatic and aromatic amines with nitrous acid.

(c) Give structure of Trimethyl amine. **3×2=6**

Section B

6. (a) Give preparation of diazonium salt and write mechanism of diazotization.

(b) Convert benzene diazonium chloride into :

(i) Iodobenzene

(ii) Benzene.

(c) Define Coupling Reaction. Write coupling reaction of benzene diazonium chloride with tert. amines.

3×2=6

7. (a) Convert Nitrobenzene into *m*-Dichlorobenzene.

(b) What is Sandmeyer Reaction ?

(c) What is Sarett Reagent ? Give disadvantages of using the reagent in oxidation of alcohols. **3×2=6**

8. (a) What is Benzoin Condensation ? Write mechanism also.
- (b) Write a short note on Wolff-Kishner reduction.
- (c) Convert CH_3COCH_3 into its :
- (i) Oxime
- (ii) Phenyl hydrazone. **3×2=6**
9. (a) Compare relative reactivity of aldehydes and ketones in nucleophilic addition reactions.
- (b) Write a short note on Tollen's Reagent test for aldehydes.
- (c) What is Cannizzaro Reaction ? Give mechanism also. **3×2=6**