## Organic Chemistry

**Q-1(A) Answer the following Questions [1 mark]**

(1) Give the name of optically inactive α-amino acid.

(2) α-amino acid heated with HI at 200 °C temperature gives_____

(3) Write the Structure of "Ninhydine"

(4)Those α-amino acid supplied by the diet are called as _____

(5) What is Isoelectric point ($P^I$) ?

(6) What is Carotenoids.

(7) Give the examples of most important poly terpenoids.

(8) Tilden reagent used for determination of_____

(9) What is conformational analysis?

(10) What is the bond angle of C-C-C in the Chair form of cyclohexane?

(11) Write name of strain exhibit in the cycloalkane?

(12) Draw chair form of cyclohexane.

(13) Which conformer of cyclohexane is least stable?

(14) Draw envelope form of cyclopentane.

(15) Which scientist had given theory about angle strains?

(16) Oxidation of diphenyl methane to form____

(17) Two moles of benzene react with formaldehyde to form which compound?

(18) Naphthalene oxidised with alkaline $KMno_4$ to form_____

(19) Naphthalene oxidised with chromic acid to form_____

(20) What is full form of RDX?

(21) 'Torpex' is a mixture of_____

(22) Provide the example of nitro musk?

(23) Give two examples of insecticide.

**(B) Answer the following Questions [2 mark]**

(1) How can detected –$COCH_3$ group in terpenoids.

(2) Describe the chromatographic method for the for the separation of

   terpenoids.

(3) Classify essential and non essential amino acids

(4) Describe denaturation of Protein

(5) Draw the classical formula and conformation for …

   (a) 1,2 Disubstistuted-cyclohexane

   (b) 1,3 Disubstistuted-cyclohexane

(6) What is stereochemistry & conformational analysis ?

(7) Complete the reaction antharacene react with Ni/H2

(8) Explain use of naphthalene

(9) Explain sulphonation of napthalene

(10) Give the use of parathion and Carbendazion.

(11) Give the synthesis of Musk ambratte

**(C) Answer the following Questions [3 mark]**

(1) Describe classification of terpenoids.

(2) How can detected of –CH$_2$-CO- group in terpenoids.

(3) Give the classification of explosive.

(4) Explain about the ingrediants of Perfumes

(5) Write short note on Zwitter ion?

(6) Write any one synthesis of polypeptide?

(7) Discuss the chemical properties of Diphenyl

(8) Give the synthesis of Anthracene from Pthaleic anhydride and Benzene

(9) Explain conformation of cyclopentane

(10) Explain chair conformation of cyclohexane

**(D) Answer the following Questions [5 mark]**

(1) Express about constitution of Citral.

(2) Elucidate oxidative degradation of terpenoids

(3) Describe about TNT with their synthesis and uses.

(4) Give the synthesis of Cyclonite

(5) Prove the structure of Thyroxine.

(6) Give the synthesis of α-amino acids.

(7) Explain the chemical properties of naphthalene

(8) Describe axial and equatorial bond in cyclohexane and ring flipping in cyclohexane

**Q-2(A) Answer the following Questions [1 mark]**

(1) The lighter cation formed by the decomposition of molecular ion is called as_____

(2) When fragment ion passing through an accelerating region it suffer from further fragmentation is called____

(3) Define Meta stable peak?

(4) Define molecular ion peak/parent ion?

(5) Write the name of detector used in mass spectroscopy?

(6) By which spectra identify nitrile and carbonyl group?

(7) What is unit of chemical shift?

(8) Which type of radiation used in NMR?

(9) How many types of hydrogen present in diethyl ether?

(10) Which isotope of carbon is NMR active?

**(B) Answer the following Questions [2 mark]**

(1) Explain the principle of Mass spectrometry.

(2) What information can be obtained from Mass spectrometry.

(3) Calculate the number of NMR signal in the following compoumds.

   a) 2,4-pentadione

   b) p-methyl-t-butylbenzene

(4) What is chemical shift?

(5) What is characteristic of proton on oxygen?

**(C) Answer the following Questions [3 mark]**

(1) Write a short note on the general modes of fragmentation.

(2) Determine the molecular structure from the following NMR data:

**M.F**. $C_6H_{12}O_6$

**NMR :**

| No. of Signal | No. of protons | Multiplicity | Chemical shift($\delta_{ppm}$) |
|---|---|---|---|
| a | 4H | qt | 2.4 |
| b | 6H | t | 1.4 |
| c | 2H | s | 4.8 |

(3) Determine the molecular structure from the following elemental analysis

and NMR data:

| Element | Composition(%) |
|---|---|
| Carbon | 62.1 |
| Hydrogen | 10.35 |

**NMR:**

| No. of Signal | No. of protons | Multiplicity | Chemical shift($\delta_{ppm}$) |
|---|---|---|---|
| a | 2H | qn | 2.75 |
| b | 4H | t | 4.75 |

**(D) Answer the following Questions [5 mark]**

(1) Determine the molecular structure from the following data:

    **M.F.** : $C_{12}H_{14}O_4$

    **IR** : 3030, 2965,2890,1725,1600,1570,1505,1450,835 cm$^{-1}$

    **NMR** :

| No. of Signal | No. of protons | Multiplicity | Chemical shift($\delta_{ppm}$) |
|:---:|:---:|:---:|:---:|
| a | 4H | s | 7.8 |
| b | 6H | t | 1.4 |
| c | 4H | qt | 3.1 |

(2) Determine the molecular structure from the following data:

    **M.F.** : $C_4H_6O_2$

    **IR** : 2900-2500(br),1690, 1637, 1430, 1300, 1230, 949 cm$^{-1}$

    **NMR** :

| No. of Signal | No. of protons | Multiplicity | Chemical shift($\delta_{ppm}$) |
|:---:|:---:|:---:|:---|
| a | 2H | s | 7.8 |
| b | 3H | s | 1.4 |
| c | 1H | s | 3.1 |

(3) Determine the molecular structure from the following data

    (i)    **M.Wt**. 134.0 g/mol

    (ii)    **Elemental analysis**

| Element | Composition (%) |
|---------|-----------------|
| Carbon | 89.55 |
| Hydrogen | 10.45 |

    (iii)    **IR**    : 2900-2500(br),1690, 1637, 1430, 1300, 1230, 949 cm$^{-1}$

    (iv)    **NMR** :

| No. of Signal | No. of protons | Multiplicity | Chemical shift($\delta_{ppm}$) |
|---------------|----------------|--------------|-------------------------------|
| a | 5H | s | 7.12 |
| b | 6H | d | 0.88 |
| c | 2H | d | 2.75 |
| d | 1H | m | 1.86 |