Roll No. .....

91035

B. Sc. (Hons.) Chemistry 1st Semester

w. e. f. 2012-13

Examination – December, 2022

CHEMISTRY (ORGANIC CHEMISTRY)

Paper : P-III

Time : Three Hours] *[Maximum Marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is ***compulsory.*** All questions carry equal marks.

1. (a) Define stereogenic centre with an example. 1 × 8 = 8

(b) Why p-nitrophenol has higher boiling point than o-nitro phenol.

(c) Which C-actom is Chiral in the structure of Lactic acid with reasoning ?

(d) Define Stereospecific Reaction with an example.

(e) Write *two* main advantages of Paper Chromatography over TLC Chromatography.

(f) Write a reaction showing the formation of Benzyne.

(g) Which Name reaction can be used for the preparation of alkanes except the main component of Marsh Gas ?

(h) Which type of hydrocarbons are called as Polyethylene's ? Give reason for it.

SECTION – I

2. (a) Why bond angle in water is higher than in hydrogen sulphide ? 2

(b) Why Alkyl halides are more reactive than Aryl halides towards nucleophilic substitution reaction ? 2

(c) Name the type of interaction (Bond) along with diagram present in between the following : 2

(i) Helium and water

(ii) Helium and Helium

(d) Explain the term Aromatic compounds with *two* Examples. 2

3. (a) Define the term Monochromatic Light and Plane polarized light with diagram. 2

(b) Define the term Plane of Symmetry and Centre of Symmetry with an example. 2

(c) Explain with examples that Dissymmetry is the basic condition of optical activity. 2

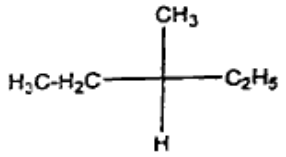
(d) Explain the term Diastereomers & Meso compounds with an example. 2

SECTION – II

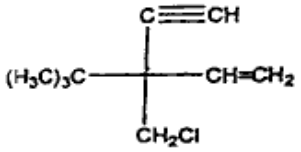
4. Using Golden Rules, determine 'R' and 'S' configuration by using all steps in the following :

2, 2, 2, 2

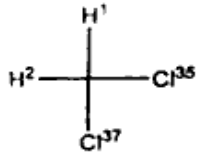
(a)



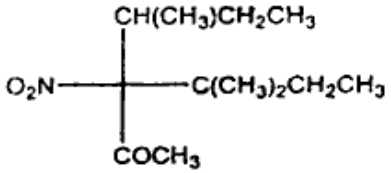
(b)



(c)



(d)



5. (a) Explain the energy order among the different conformations of Cyclohexane. 4

(b) Explain 'E' & 'Z' system of Nomenclature in Alkenes using suitable examples. 4

SECTION – III

6. Write the structure, hybridization, bond angle, number of electrons around central atom in the following : 4, 4

(a) Carbonium ion

(b) Carbanion

7. (a) Write a note on Gas chromatography. 4

(b) How can you determine the mechanism of reaction by Isotopic effects ? 4

SECTION – IV

8. (a) What will happen when ? 4

(i) Ethene reacts with HCl followed by reaction with sodium in presence of dry ether

(ii) Propene reacts with H_2 / Ni at 573-673 K

(iii) Methoxy methane reacts with HI/Red 'P'

(iv) Potassium salt of Ethanoic acid reacts with $NaOH/CaO$

(b) How can you convert ? 4

(i) Sodium acetate into Methene.

(ii) 1, 3-dibromopropane into cyclopropane.

(iii) Methane into Ethane

(iv) Ethane into propane

9. (a) Explain in detail about Baeyer's Strain theory. 4

(b) Explain the following reactions : 4

(i) Thorpe-Ziegler reaction

(ii) Dieckman cyclisation