**Model Question Paper**

Isomerism in Organic Chemistry - Part I

12th Standard

**Chemistry**

Reg.No. : | | | | | | |

I.Answer all the questions.

II.Use blue pen only.

Time : 01:30:00 Hrs

Total Marks : 70

## Part-A

5 x 1 = 5

1) Identify chiral molecule among the following:

(a) isopropyl alcohol (b) isobutyl alcohol (c) 2-pentanol (d) 1-bromo-3-butene

2) Which among the following is not having an asymmetric carbon atom?

(a) 2-chloro butane (b) 2-bromo-3-butene (c) 2-hydroxy propanal (d) isobutyric acid

3) Which among the following can be a chiral center ?

(a) $C^+$ of a cabocation (b) carbon of a radical (c) an $sp^2$ carbon (d) an $sp^3$ carbon

4) Which of the following can exist as geometric isomers?

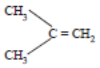
(a) $ClCH_2 \equiv CCH_3$ (b) $ClCH_2 - CH = CH - CH_2Cl$ (c) $CH_2 = CHCHO$ (d) $CH_2 = \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} - CH_2 - CH_3$

5) Which of the following exhibits stereoisomerism (i) 1,2-dichloro ethylene (ii) 2-hydroxy propanoic acid (iii) 1,1-dichloro ethylene (iv) 2-methyl propane

(a) (i) and (iv) (b) (ii) and (iv) (c) (i) and (ii) (d) (iii) and (iv)

## Part-B

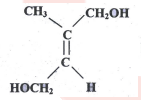
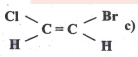
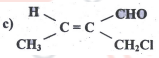
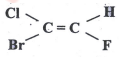
5 x 3 = 15

6) Arrange the following in the increasing order of stability. $CH_3CH_2CH = CH_2, CH_3CH = CHCH_3(cis), CH_3CH = CHCH_3(trans)$ 

7) How many linear chain isomers are possible for each of the following olefins? (a) $C_4H_8$ (b) $C_5H_{10}$ (c) $C_3H_6$ (d) $C_6H_{12}$

8) Draw the cis, trans isomers for the following and designate them as E or Z. (a) $HOH_2C - CH = CHCH_2CH_3$ (b) $CH_3CH = CHCO_2H$ (c) $CH_3CH = CH - CHO$ (d) $CHCl = CHBr$

9) Which one of the following can exist as geometric isomers? (a) $ClCH_2C \equiv CCH_3$ (b) $ClCH_2 - CH = CH - CH_2Cl$ (c) $CH_2 = CHCHO$ (d) $CH_2 = \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} - CH_2CH_3$

10) Label the following as E, Z isomers. a)  b)  c)  d) 

## Part-C

6 x 5 = 30

11) Explain the following with examples. (a) cis-trans isomerism (b) optical isomerism.

12) Distinguish enantiomers and diasteromers ?

13) What is a racemic mixcture ? Explain with suitable example.

14) Mesotartaric acid is an optically inactive compound with chiral carbon atoms.Justify.

15) Distinguish racemic form from Meso form.

16) Explain Cisoid-Transoid isomerism

## Part-D

2X10=20

17) a) Explain the conformation in cyclohexane.

b) Among cyclohexanol with axial-OH and equatorial -OH which is more stable? Why?

18) a) Mesoform has two similar asymmetric carbon atmos.Even then it is optically inactive.Why?

b) Explain the optical isomerism of tartaric acid.

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