

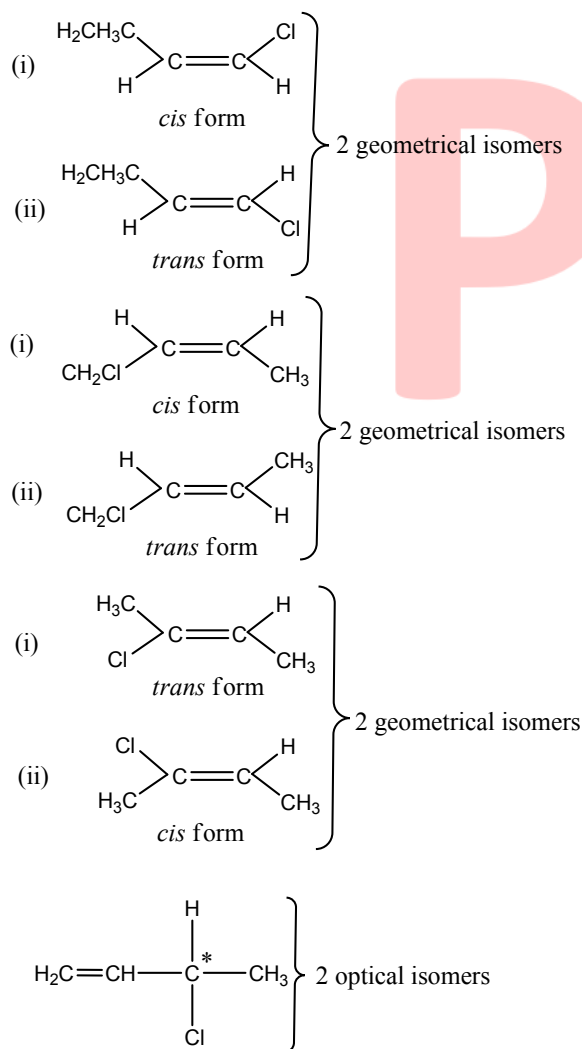
## Topic :-ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES AND TECHNIQUES

1 (a)

Racemisation involves change in entropy, *i.e.*, change in arrangement of groups position leading to a change in entropy of disorderness.

2 (a)

The acyclic stereoisomers of  $C_4H_7Cl$  are

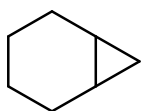


Number of optical isomers =  $2^n = 2^1 = 2$

Hence, total number of geometrical isomers=6

Total number of optical isomers =2.

3 (c)

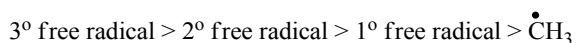


bicyclo (4, 1, 0) heptane

This compound contains 7 carbon atoms, so the corresponding alkane is heptane. Two bridges contain 4 and 1 carbon atom respectively and one bridge does not contain any carbon atom. So the name of the compound is bicyclo (4,1,0) heptane.

4 (d)

Stability of alkyl free radicals can be explained by hyperconjugation and number of resonating structure due to the hyperconjugation. The decreasing order of stability of alkyl free radical is as follows



6 (b)

Inductive effect involves only displacement (and not delocalisation) of  $\sigma$  – electrons.

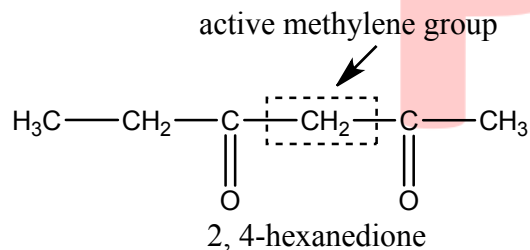
7 (c)

*Meso* forms are optically inactive as they are superimposable to their mirror images.

8 (b)

$\text{CH}_4$  has highest ratio of H to C

9 (b)



When methylene group ( $-\text{CH}_2$ ) is attached with two electron withdrawing groups (like,  $-\text{CHO}$ ,  $>\text{C}=\text{O}$ ,  $-\text{COOH}$ ,  $-\text{CN}$ ,  $-\text{X}$ , etc), its acidity will increase due to  $-I$  effect of the electron withdrawing groups.

10 (a)

Follow IUPAC rules.

11 (c)

The reactivity order for H atom is  $3^\circ > 2^\circ > 1^\circ$ ; Neocarbon does not have H atom.

13 (b)

—do—

14 (a)

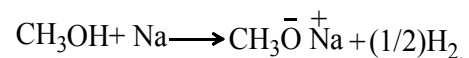
Organic compound which are volatile in steam can be purified by steam distillation. It is based on the fact that vaporisation of organic liquid takes place at lower temperature than its boiling point

15 (b)

Follow IUPAC rules.

17 (d)

$\text{CH}_3\bar{\text{O}}$  is nucleophile;



18 (a)

Inductive effect is the permanent effect on  $\sigma$  – electrons. It involve the electron displacement along the chain of saturated carbon atoms due to the presence of a polar covalent bond at one end of the chain.

19 (c)

Homologous differ by a group  $-\text{CH}_2$  and cannot be isomer.

20 (c)

The reagent selected should be such that only one of components to be separated, reacts with it.

Aniline + aq. HCl  $\rightarrow$  salt, which is water soluble

Nitrobenzene + aq. HCl  $\rightarrow$  no reaction

$\therefore$  aq. HCl is used to separate aniline and nitrobenzene.

PE

**ANSWER-KEY**

Q.	1	2	3	4	5	6	7	8	9	10
A.	A	A	C	D	B	B	C	B	B	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	C	B	A	B	C	D	A	C	C

PE