DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth
DATE :

SOLUTION

SUBJECT : CHEMISTRY
DPP NO. : 4

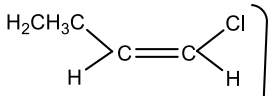
Topic :-ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES AND TECHNIQUES

1 **(a)**

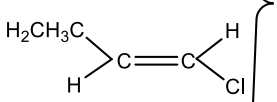
Racemisation involves change in entropy, $i.e.$, change in arrangement of groups position leading to a change in entropy of disorderness.

2 **(a)**

The acyclic stereoisomers of C_4H_7Cl are

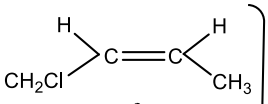
(i) 

cis form

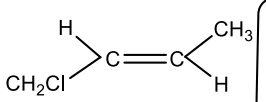
(ii) 

trans form

} 2 geometrical isomers

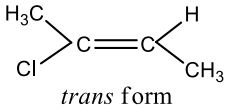
(i) 

cis form

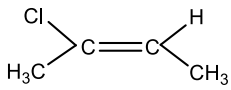
(ii) 

trans form

} 2 geometrical isomers

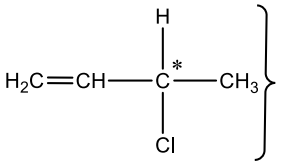
(i) 

trans form

(ii) 

cis form

} 2 geometrical isomers

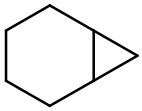


} 2 optical isomers

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

3^{o} free radical > 2^{o} free radical > 1^{o} free radical > $\dot{C}H_3$

6 **(b)**

Inductive effect involves only displacement (and not delocalisation) of σ −electrons.

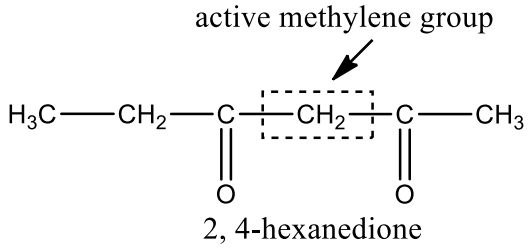
7 **(c)**

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

8 **(b)**

CH_4 has highest ratio of H to C

9 **(b)**



2, 4-hexanedione

When methylene group $(-CH_2)$ is attached with two electron withdrawing groups (like, −CHO, $> C = O, -COOH, -CN, -X, etc$), 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 $3° > 2° > 1°$; 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)**

$CH_3\bar{O}$ is nucleophile;

$$CH_3OH + Na \longrightarrow CH_3\bar{O}\,\overset{+}{Na} + (1/2)H_2$$

18 **(a)**

Inductive effect is the permanent effect on σ −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 — 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→salt, which is water soluble

Nitrobenzene +aq. HCl→no reaction

∴ aq. HCl is used to separate aniline and nitrobenzene.

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