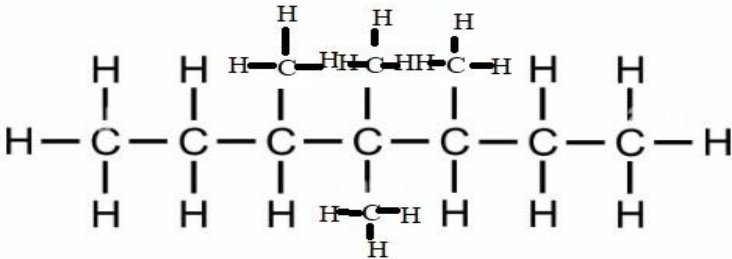
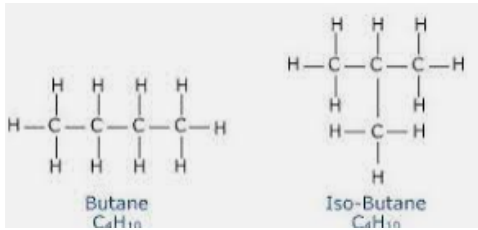
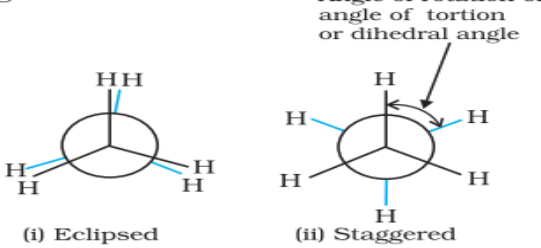
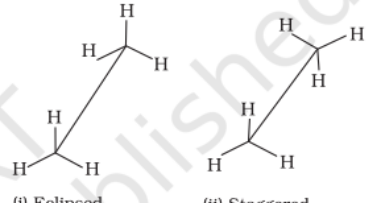
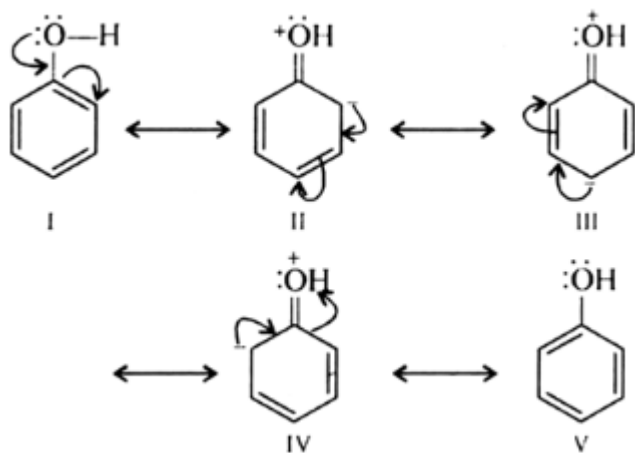


INDIAN SCHOOL AL WADI AL KABIR  
UNIT TEST II-2022-2023  
CHEMISTRY (043)- MARKING SCHEME

Q.NO	ANSWERS	MARKS
1	b. Cr <sub>2</sub> O <sub>3</sub> , 773 K, 10-20 atm	1
2	c. Hyperconjugation effect	1
3	a. Nitrogen	1
4	b. Homolytic bond fission	1
5	c. 8 σ bonds and 1 π bond	1
6	a. sp <sup>3</sup>	1
7	c. Pentanenitrile	1
8	a. Both A and R are true and R is the correct explanation of A.	1
9	b. Both A and R are true but R is not the correct explanation of A.	1
10	<p>a. 2,2-Dimethylpropane &lt; 2-Methylbutane &lt; n-pentane</p> <p>b.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">OR</p> <p>a. Sodium salts of carboxylic acids on heating with soda lime (mixture of sodium hydroxide and calcium oxide) give alkanes.</p> $\text{CH}_3\text{COO}^- \text{Na}^+ + \text{NaOH} \xrightarrow[\Delta]{\text{CaO}} \text{CH}_4 + \text{Na}_2\text{CO}_3$ <p style="text-align: center;">Sodium ethanoate <span style="margin-left: 150px;">Methane</span></p> <p>b. The reactions in which hydrogen atoms of alkanes are substituted are known as substitution reactions.</p> $\text{CH}_4 + \text{Cl}_2 \xrightarrow{h\nu} \text{CH}_3\text{Cl} + \text{HCl}$ <p style="text-align: center;">Chloromethane</p>	<p>1</p> <p>1</p> <p>1</p>
11	<p>a. Due to hyperconjugation and inductive effect</p> <p>b. Magnitude of inductive effect diminishes as the number of intervening bonds increases</p>	<p>½, ½</p> <p>1</p>
12	<p>a.</p> <div style="text-align: center;">  </div> <p>b. Tetrahedral, sp<sup>3</sup></p>	<p>1</p> <p>½, ½</p>

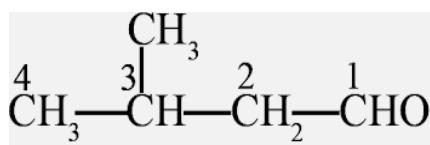
13	<p>a.</p> <div style="border: 1px solid gray; padding: 10px; width: fit-content; margin: 0 auto;"> <math display="block">2\text{CH}_3\text{CH}_2\text{Br} + 2\text{Na}</math> <math display="block">\downarrow</math> <math display="block">\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 + 2\text{NaBr}</math> </div> <p>b.</p> $\text{CH}_3(\text{CH}_2)_4\text{CH}_3 \xrightarrow{\text{Anhy. AlCl}_3/\text{HCl}}$ <p><i>n</i>-Hexane</p> $\text{CH}_3\text{CH}(\text{CH}_3)(\text{CH}_2)_2\text{CH}_3 + \text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$ <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <math>\text{CH}_3</math>        2-Methylpentane     </div> <div style="text-align: center;"> <math>\text{CH}_3</math>        3-Methylpentane     </div> </div> <p>c.</p> $\text{CH}_3-\text{CH}=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{Pt/Pd/Ni}} \text{CH}_3-\text{CH}_2-\text{CH}_3$ <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="text-align: center;">Propene</div> <div style="text-align: center;">Propane</div> </div>	<p>1/2, 1/2</p> <p>1/2, 1/2</p> <p>1</p>
14	<p>a. The functional group is an atom or a group of atoms joined to the carbon chain which is responsible for the characteristic chemical properties of the organic compounds. Any suitable example</p> <p>b. A reagent that takes away an electron pair from reactive site is called electrophile (E<sup>+</sup>) Any suitable example</p> <p>c. Alicyclic (aliphatic cyclic) compounds contain carbon atoms joined in the form of a ring. Any suitable example</p> <p style="text-align: center;">OR</p> <p>a. Tropone</p> <p>b. i. 3-Ethyl-4,4-dimethylheptane ii. 1-Chloro-2,4-dinitrobenzene</p>	<p>1/2, 1/2</p> <p>1/2, 1/2</p> <p>1/2, 1/2</p> <p>1</p> <p>1</p> <p>1</p>
15	<p>a. Staggered, Bonds are as far apart as possible, less repulsion.</p> <p>b. Methane</p> <p>c.</p> <div style="text-align: center;">  <p>(i) Eclipsed      (ii) Staggered</p> <p style="text-align: center;">OR</p>  <p>(i) Eclipsed      (ii) Staggered</p> </div>	<p>1/2, 1/2</p> <p>1</p> <p>1,1</p> <p>1,1</p>
16	a. Sublimation -Explanation	1

b.



1

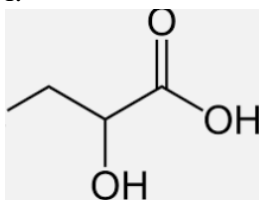
c.



1

d.

i.



1

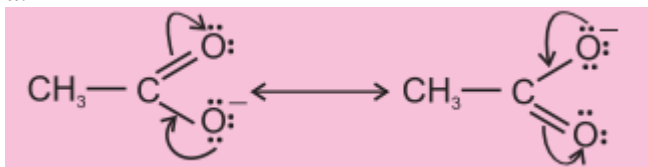
ii.



1

OR

a.



1

b. CH<sub>3</sub>CH(Cl)(CH<sub>2</sub>)<sub>3</sub>CH<sub>3</sub>

1

c. H<sub>3</sub>C-Br, Br is more electronegative

1

d.

i. A group or a series of organic compounds each containing a characteristic functional group forms a homologous series.

1

ii. In this effect the π - electrons of the multiple bond are transferred to that atom to which the attacking reagent does not get attached.

1

