



CBSE

CLASS 12

CHEMISTRY

VOLUME- II



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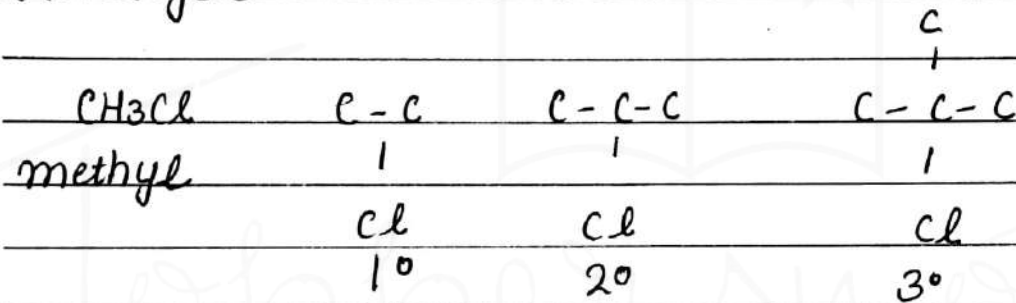
3. Tri-haloalkane \rightarrow $\text{CHCl}_3, \text{CBr}_4$

4. Tetra-haloalkane \rightarrow CCl_4

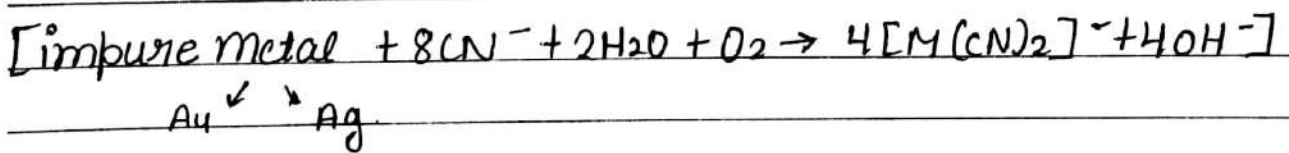
\rightarrow On the basis of hybridization of carbon: -

① Sp^3C

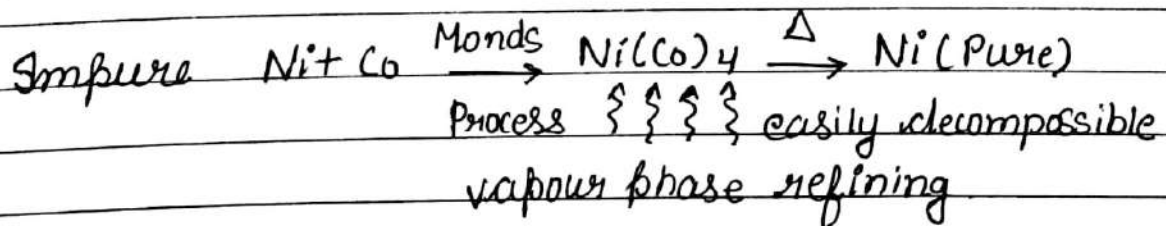
(i) Alkyllic



③ $[\text{Au}(\text{CN})_2]^-$ is made in metallurgy of gold (Au)



④ Nickel carbonyl $[\text{Ni}(\text{CO})_4]$ is made in the purification of metal.



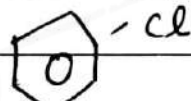
5. Haemoglobin is co-ordination compound of iron.

6. Chlorophyll is a co-ordination compound of Mg

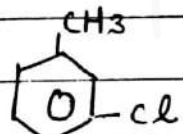
7. By chelation, EDTA can remove lead poisoning

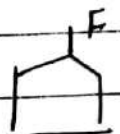
8. Cis-platin inhibits the growth of tumours:

6. $C=C-Cl$ Allyl chloride.

7.  phenyl chloride

8.  Benzyl chloride

9.  m-tolyl chloride

10.  cyclopentyl fluoride

★ Nature of \rightarrow

① Halogens are more electro-negative than carbon, so C-X bond is polar

② Halogen has partial -ve charge while carbon has partial +ve charge

③ Halogen shows -I effect.

$$R-\overset{\delta+}{C}H_2 \rightarrow X^{\delta-}$$

④ Molecule has some net dipole moment which follows the given order: $RI > RF > RBr > ICl$

Note: - O-Are F, S, abnormally lesser dipole moment although fluorine is very electro-negative, this is because fluorine has very small size.

★ Preparation of haloalkanes: →

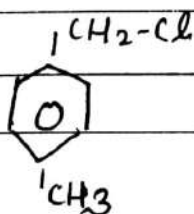
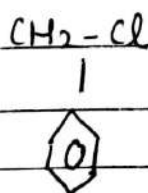
① From Alcohol:-

(a) From Lucas reagent: (i) It is a mixture of $ZnCl_2$ and HCl .

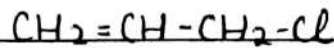
(ii) Alcohol reacts with HCl to produce $R-X$ and H_2O

(iii) $ZnCl_2$ acts as a dehydrating agent and as a catalyst.

(ii) Benzyl

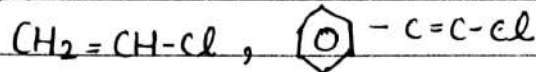


(ii) Allylic

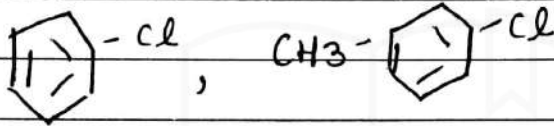


2.) $\text{sp}^2 \text{C}$

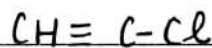
(i) Vinylic



(ii) Arylic



3.) $\text{sp} \text{C}$

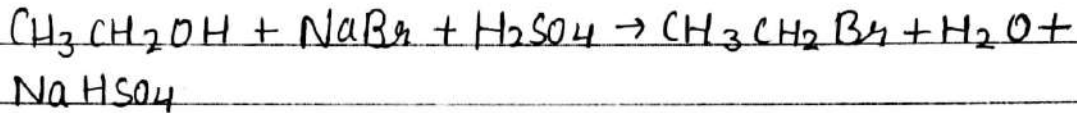


★ NOMENCLATURE :->

Compound	Common Name	IUPAC NAME
1. $\text{C}-\text{C}-\text{Cl}$	ethyl chloride	
2. $\begin{array}{c} \text{C}-\text{C}-\text{C} \\ \\ \text{Cl} \end{array}$	iso-propyl chloride	
3. $\begin{array}{c} \text{C} \\ \\ \text{C}-\text{C}-\text{C} \\ \\ \text{Cl} \end{array}$	tert-butyl chloride	
4. $\begin{array}{c} \text{C} \\ \\ \text{C}-\text{C}-\text{C}-\text{Cl} \\ \\ \text{C} \end{array}$	Neo-pentyl chloride	
5. $\text{C}=\text{C}-\text{Cl}$	Vinyl chloride	

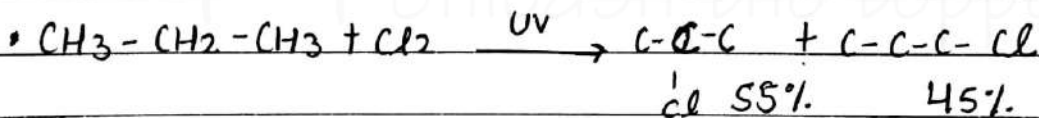
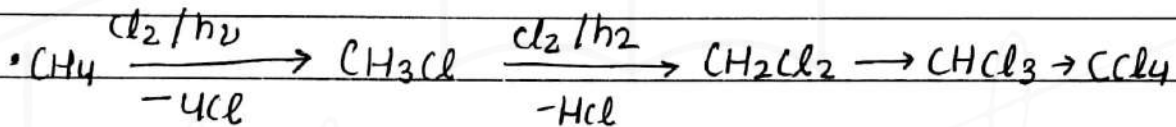
This Rx is preferred as bi-product HCl & SO₂ are gases and are removed by themselves

(iv) One more reaction



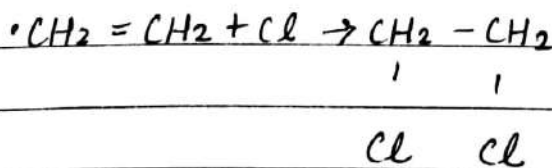
2) Rx with hydrocarbon:-

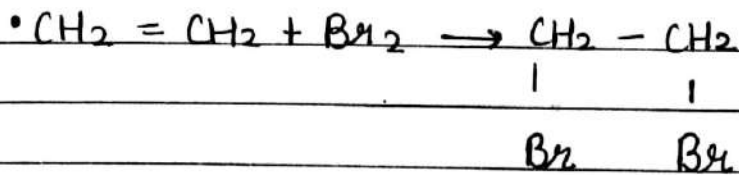
cleaves react with halogen via free radical mechanism in presence of UV rays to form haloalkanes:-



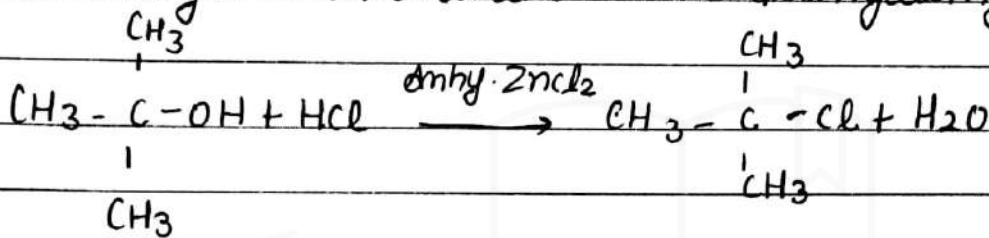
These Rx produce mixture of haloalkane so these are generally discharged.

3. From Alkene





→ Alkene decolorize bromine water as they contain double bond. This Rx is helpful in detecting unsaturation and distinguishing b/w Alkane



d) Rate of Rx for Alcohol follows the given order
 $3^\circ > 2^\circ > 1^\circ$

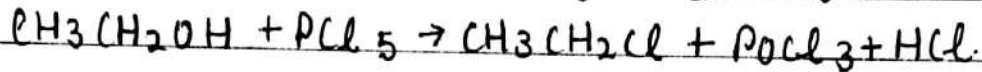
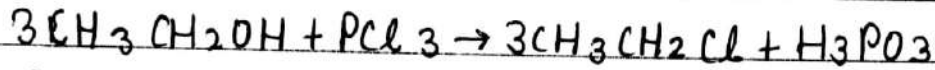
The Rx is fastest on 3° as it involves carbocation as intermediate and 3° Carbocation is most stable. In fact 3° alcohol given in absence of ZnCl_2 .

The Rx can be used to distinguish b/w $1^\circ, 2^\circ, 3^\circ$ alcohol. 3° Alcohols form turbidity with Lucas reagent immediately, 2° Alcohols takes abt. 5 mins while, 1° takes even longer time.

e) For acid, order of Rx is
 $\text{HI} > \text{HBr} > \text{HCl}$

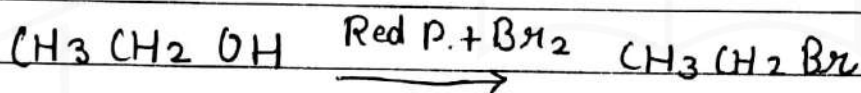
Lesser the dissociation energy, higher will be reactivity.

(ii) Rx with PCl_3 & PCl_5 .

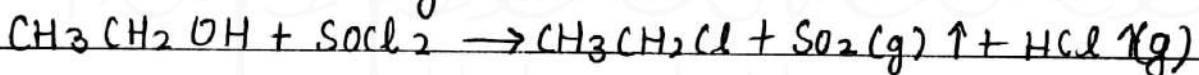


Red phosphorus & Br_2 / I_2

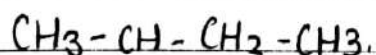
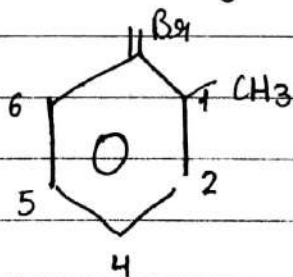
As PBr_3 & PI_3 are unstable, these are prepared insitive as follows to proceed Rx.



(iii) Rx with thionyl chloride.

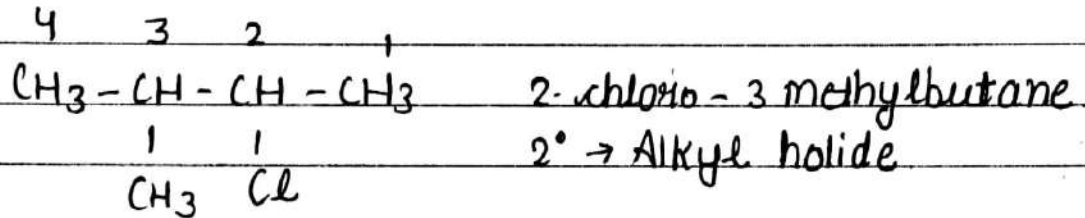


(iv) 1-Bromo-4-sec butyl-2-methylbenzene.

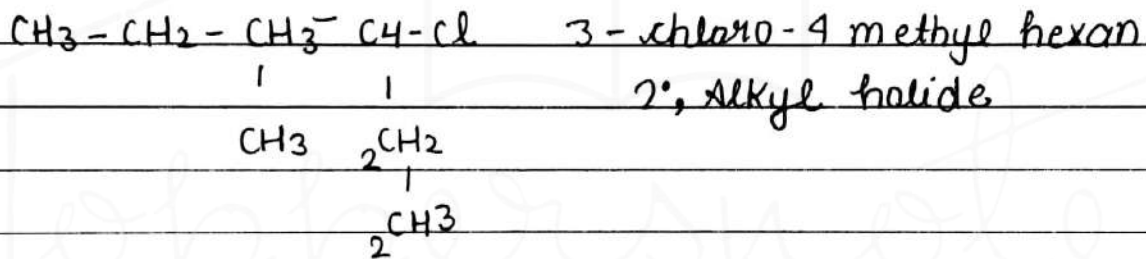


pg 310, Exercises

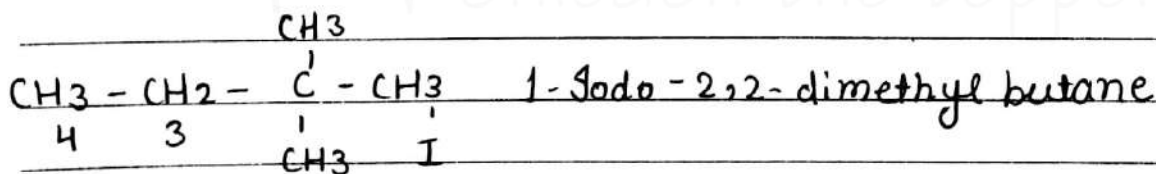
Ans. 10-1 (i) $(\text{CH}_3)_2 \text{CHCH}(\text{Cl}) \text{CH}_3$



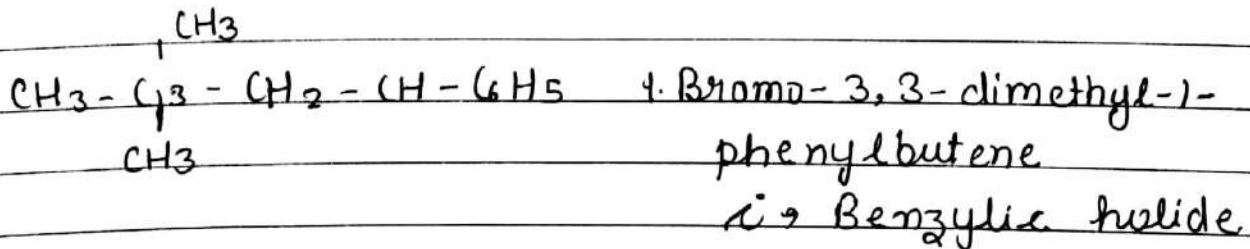
(ii) $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}(\text{C}_2\text{H}_5)\text{Cl}$



(iii) $(\text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)_2\text{CH}_2\text{I}$



(iv) $(\text{CH}_3)_3\text{CCH}_2\text{CH}(\text{Br})\text{C}_6\text{H}_5$



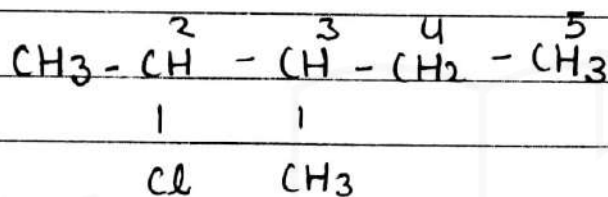
and alkene or Alkane and alkyne

(Continued after have work)

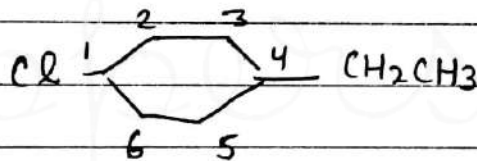
★ Homework Questions:-

pg 285, Intex - Questions

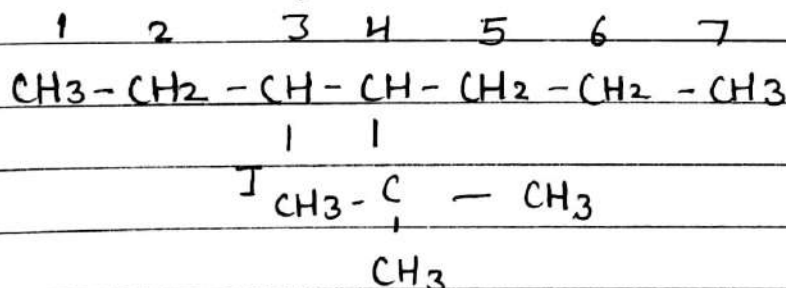
Qns. 10.1 (i) 2-chloro-3 Methyl pentane



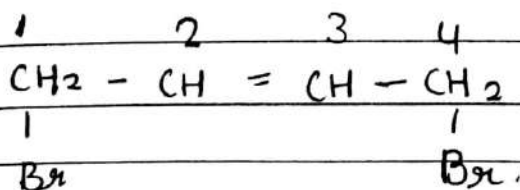
(ii) 1-chloro-4-ethylcyclohexane.

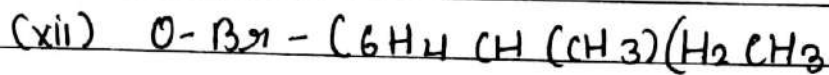


(iii) 4-tert butyl-3-iodoheptane



(iv) 1,4-Dibromobut-2-ene

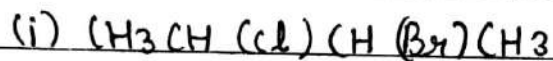




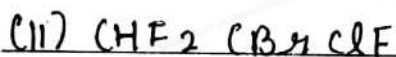
1-Bromo-2-(1-methylpropyl) benzene
or

1-Bromo-2-sec-butylbenzyl aryl halide

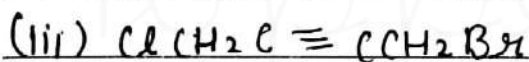
Ans. 10.2



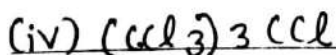
2-Bromo-3-chlorobutane



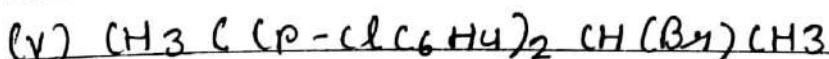
1-Bromo-1-chloro-1,2,2-trifluoro ethane



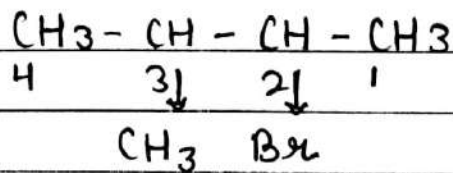
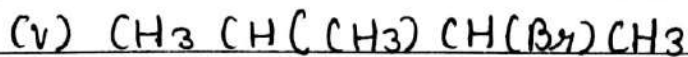
1-Bromo-4-chlorobut-2-yne



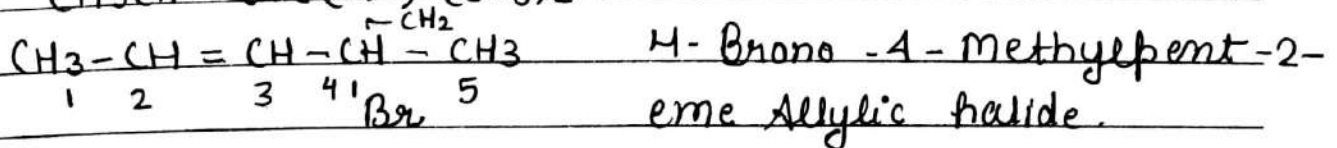
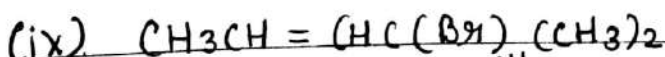
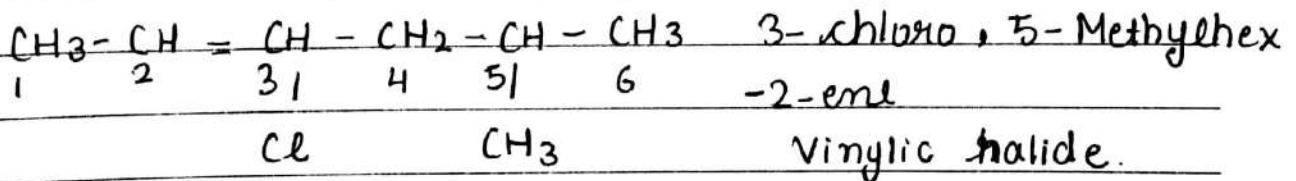
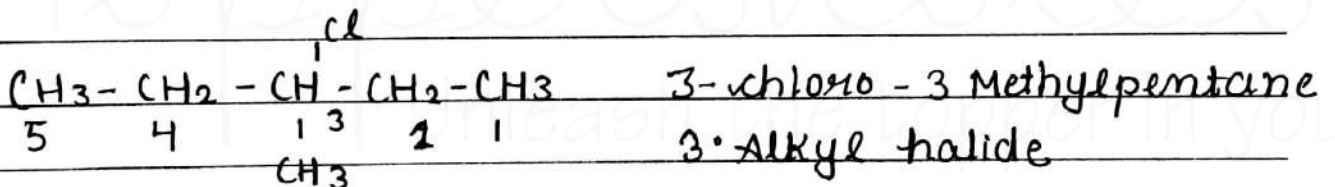
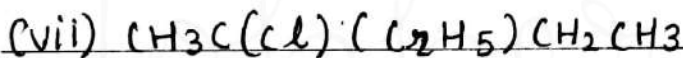
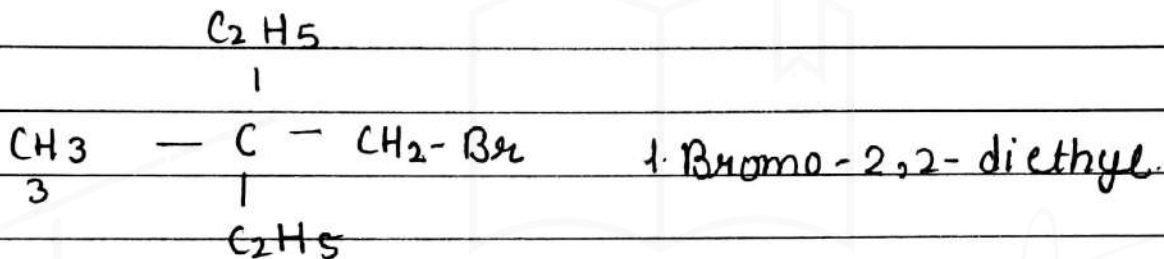
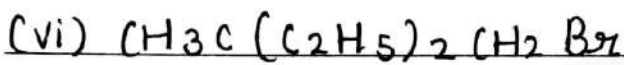
2-(Trichloromethyl)-1,1,1,2,3,3,3-heptachloropropane

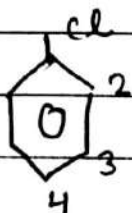
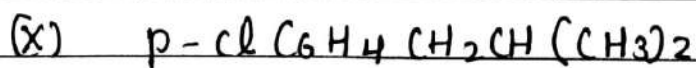


2-Bromo-3,3-bis(4-chlorophenyl) butane

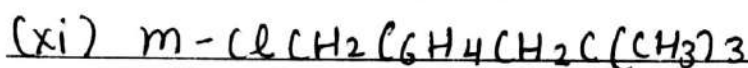
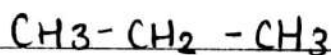


2-Bromo-3-Methylbutane 2°, Alkyl halide.

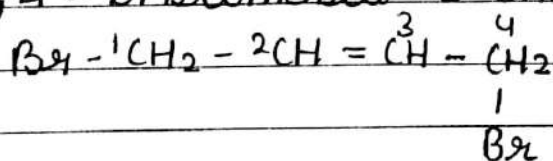
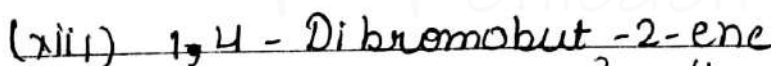
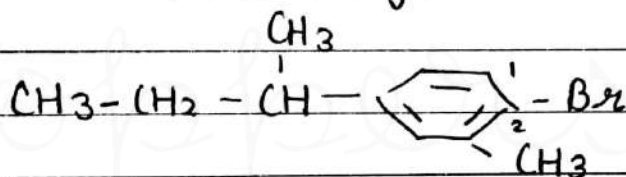
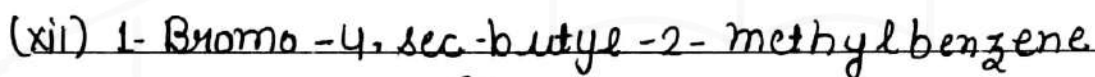




1-chloro-4-(2-methylpropyl)benzene, aryl halide.



1-chloromethyl-3-(2,2-dimethylpropyl)benzene
 1° benzylic halide

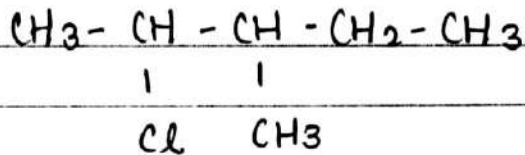


Ans: 10.5 Hydrocarbon with molecular formula C_5H_{10} can be either a cycloalkane or an alkene. Since the hydrocarbon does not react with Cl_2 in dark, so it cannot be an alkene but must be a cycloalkane.

cycloalkane react with Cl_2 in bright sunlight, to give a single monochloro compd., ~~etc.~~

Ans-10.3

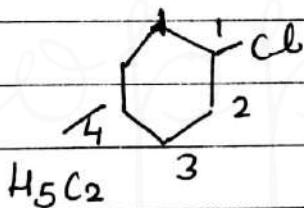
(i) 2-chloro-3-methylpentane.



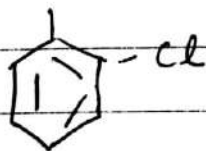
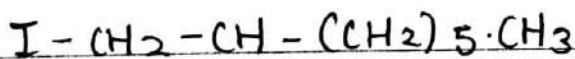
(ii) p-Bromochlorobenzene



(iii) 1-chloro-4-ethylcyclohexane



(iv) 2-(2-chlorophenyl)-1-iodoacetone



(vi) 4-tert-butyl-3-iodoheptane

