



**ORGANIC CHEMISTRY - STRUCTURES, IUPAC, OZONOLYSIS,
HYDROHALOGENATION**

Class 11 - Chemistry

Time Allowed: 1 hour and 30 minutes

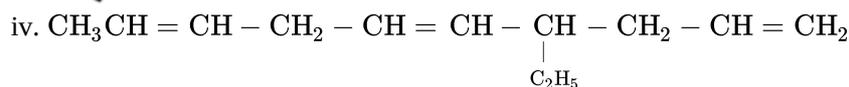
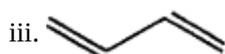
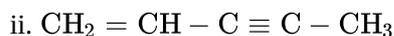
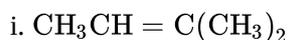
Maximum Marks: 50

1. R_2CuLi is the intermediate formed in the Corey- House synthesis. It is called [1]
 - a) Corey-House reagent
 - b) Gilman reagent
 - c) Schmidt reagent
 - d) Frankland reagent
2. $C_5H_{11}Cl$ by Wurtz reaction forms 2,2,5,5-tetramethylhexane as the main product. Hence, $C_5H_{11}Cl$ is [1]
 - a) 2-methyl-1-chlorobutane
 - b) Both (2,2-dimethyl-1-chloropropane) and (2-methyl-1-chlorobutane)
 - c) 2,2-dimethyl-1-chloropropane
 - d) None of these
3. Eclipsed form of ethane has higher energy due to [1]
 - a) angle strain
 - b) torsional strain
 - c) steric strain
 - d) Both torsional strain and angle strain
4. In the iodination of alkane, some HIO_3 is also added so that [1]
 - a) reaction is selective
 - b) HI formed is oxidised to I_2
 - c) reaction is made reversible
 - d) reaction is made faster
5. n-propylmagnesium bromide on hydrolysis gives propane. Is there any other Grignard reagent which also gives propane? If so, give Its name, structure and equation for the reaction. [1]
6. Sodium salt of which acid will be needed for the preparation of propane? Write chemical equation for the reaction. [1]
7. Why do hydrocarbon molecules with an odd number of carbon atoms have lower melting points than those with an even number of carbon atoms? [1]
8. Convert 1-bromopropane to 2-bromopropane. [1]
9. Why is Wurtz reaction not preferred for the preparation of alkanes containing odd number of carbon atoms? Illustrate your answer by taking one example. [2]
10. Write structures for each of the following compounds. Why are the given names incorrect? Write correct IUPAC names. [2]
 - i. 2-ethylpentane
 - ii. 5-ethyl-3-methylheptane
11. Arrange 2,2-dimethylbutane, 3-methylpentane and n-hexane in increasing order of their boiling point. [3]
12. Write the structures and names of products obtained in the reactions of sodium with a mixture of 1-iodo-2-methylpropane and 2-iodopropane. [3]

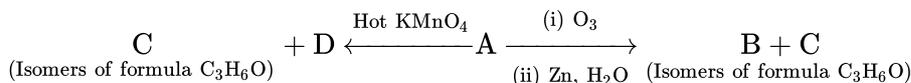
13. Match the hydrocarbons in Column I with the number of 3° carbon in Column II and choose the correct option using the codes given below: [1]

Column I	Column II
A. Neo-pentane	(i) 3
B. ISO-pentane	(ii) 2
C. 2,3-dimethylbutane	(iii) 1
D. 1, 2, 3-trimethyl cyclohexane	(iv) 0

- a) A - (iv), B - (iii), C - (i), D - (ii) b) A - (iv), B - (iii), C - (ii), D - (i)
 c) A - (i), B - (ii), C - (iii), D - (iv) d) A - (iii), B - (iv), C - (ii), D - (i)
14. Major product of the dehydration of the following compound is $(\text{CH}_3)_3\text{CCH}(\text{OH})\text{CH}_3$ [1]
- a) $(\text{CH}_3)_2\text{C} = \text{C}(\text{CH}_3)_2$ b) $\text{CH}_3\text{CH}_2\text{CH} = \text{CHCH}_2\text{CH}_3$
 c) $(\text{CH}_3)_2\text{CHC}(\text{CH}_3) = \text{CH}_2$ d) $(\text{CH}_3)_3\text{CCH} = \text{CH}_2$
15. The correct IUPAC name of the given structure $\text{H}_3\text{C} - \underset{\text{CH}_3}{\text{CH}} - \text{C} \equiv \text{CH}$ is [1]
- a) 2-methylbut-3-yne b) 2-methylbut-1-yne
 c) 3-methylbut-1-yne d) 1-methylbut-3-yne
16. $\text{CH}_3 - \text{C} \equiv \text{CH} + \text{Br} - \text{Br} \longrightarrow \text{A}$. [1]
 Here, A refers to
- a) $\text{BrCH}_2 - \text{CH} = \text{CHBr}$ b) $\text{Br} - \text{CH}_2 - \text{CBr} = \text{CH}_2$
 c) $\text{CH}_3 - \text{CBr} = \text{CHBr}$ d) $\text{CH}_3 - \text{CH} = \text{CBr}_2$
17. The common name and IUPAC name of $\text{CH}_3\text{CH}_2 - \text{C} \equiv \text{CH}$, respectively are [1]
- a) ethylacetylene and but-1-yne b) methylacetylene and but-2-yne
 c) acetylene and but-2-yne d) dimethylacetylene and but-2-yne
18. When $\text{CH}_3 - \text{C} \equiv \text{CH}$ reacts with one mole of HBr then product obtained is [1]
- a) 2-bromopropene b) 1-bromopropane
 c) bromoethene d) dibromopropane
19. Which among the two trans-but-2-ene or trans-pent-2-ene is non-polar? [1]
20. Write an equation of the reaction of propyne with water in the presence of H_2SO_4 and HgSO_4 . Show the intermediate. [1]
21. How will you distinguish propane and propene by giving chemical tests? [1]
22. The intermediate carbocation formed in the reactions of HI, HBr and HCl with propene is the same and the bond energy of HCl, HBr and HI is $430.5 \text{ kJ mol}^{-1}$, $363.7 \text{ kJ mol}^{-1}$ and $296.8 \text{ kJ mol}^{-1}$ respectively. What will be the order of reactivity of these halogen acids? [2]
23. Write IUPAC names of the following compounds. [3]



24. Give the structures of A and B. [3]



25. Write IUPAC name of the products obtained by the ozonolysis of the following compounds: [5]

i. Pent-2-ene

ii. 3,4-dimethylhept-3-ene

iii. 2-ethylbut-1-ene

iv. 1-phenylbut-1-ene

26. Match the compounds given in Column I with suitable properties/reagent given in Column II and choose the correct option using codes given below: [1]

Column I	Column II
A. Cis-but-2-ene, trans-but-2-ene	(i) Alkaline KMnO_4
B. n-butane, propane	(ii) Dipole moment
C. Ethene, ethane	(iii) Melting point
D. But-1-ene, but-2-ene	(iv) Ozonolysis

a) A - (i), B - (iv), C - (ii), D - (iii)

b) A - (ii), B - (iii), C - (i), D - (iv)

c) A - (iii), B - (ii), C - (i), D - (iv)

d) A - (i), B - (ii), C - (iii), D - (iv)

27. Match the Column I with Column II and choose the correct option from the codes given below. [1]

Column I	Column II
(A) $\text{RC} \equiv \text{CR} \xrightarrow[\text{CH}_3\text{COOH}]{\text{BH}_3 \cdot \text{THF}}$	(i) $\text{CH}_3 - \text{C} \equiv \text{C} - \text{Na}$
(B) $\text{RC} \equiv \text{CR} \xrightarrow[\text{H}_2]{\text{Pd/Ni}}$	(ii) $\text{R} - \text{CH}_2 - \overset{\text{O}}{\parallel}{\text{C}} - \text{R}$
(C) $\text{CH}_2\text{CH}_2\text{Br} \xrightarrow[\text{NaNH}_2]{\text{Alc. KOH}}$ Br	(iii) $\text{CH}_3 - \text{C} \equiv \text{C} - \text{OH}$
(D) $\text{CH}_3\text{C} \equiv \text{CH} \xrightarrow{\text{NaNH}_2}$	(iv) $\text{R} - \text{CH}_2 - \text{CH}_2 - \text{R}$
	(v) $\text{CH} \equiv \text{CH}$

a) (A) - (ii), (B) - (iv), (C) - (iii), (D) - (v)

b) (A) - (ii), (B) - (v), (C) - (iv), (D) - (i)

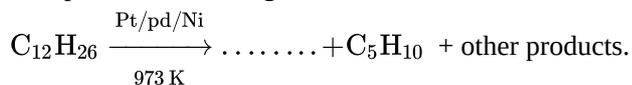
c) (A) - (ii), (B) - (iv), (C) - (v), (D) - (i)

d) (A) - (ii), (B) - (iv), (C) - (v), (D) - (iii)

28. Fill in the blanks: [8]

(a) Fill in the blanks by choosing the appropriate word(s) from those given in the brackets: [4]
(C_7H_{16} , alkanes, water, sodium metal)

- i. When unsaturated compound i.e alkenes are treated with dihydrogen in the presence of finely divided catalyst _____ are obtained.
- ii. When alkyl halides are treated with _____ in the presence of dry ether (free from moisture) it results in the formation of an alkane having double number of carbons as that present in parent-halide.
- iii. Alkanes are lighter than _____.
- iv. Complete the following reaction.

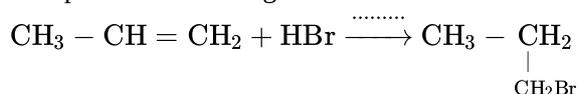


(b) Fill in the Blanks:

[4]

(alkene, C_nH_{2n} , Lindlar's catalyst, $(\text{C}_6\text{H}_5\text{CO})_2\text{O}_2$)

- i. The general formula of alkene is _____.
- ii. Alcohols when treated with concentrated sulphuric acid at 170°C _____ is obtained.
- iii. Complete the following reaction:



- iv. Alkynes on hydrogenation with _____ or with Na or Li in liquid ammonia gives alkenes.