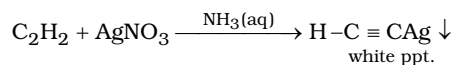


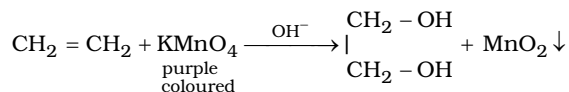
1. Acetylene can be distinguished from methane using Tollen's reagent:



No such reaction occur with methane.

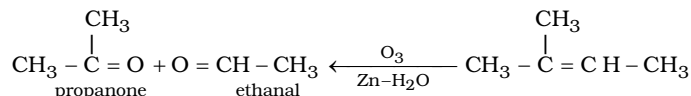
- 2.(B) Methane is produced due to the decay of vegetables or animal organisms present in swamps and marsh, by the action of bacteria. Due to this method of formation methane is also known as marsh gas.

- 3.(D) Unsaturated compounds which contain  $\text{C}=\text{C}$  or  $\text{C}\equiv\text{C}$ , decolourises the purple colour of alkaline  $\text{KMnO}_4$  solution.

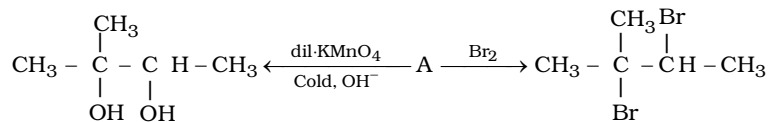


4. Terminal alkyne (ethyne) are acidic.

5. Ozonolysis products are the key of identification:



Other products are :



6. 
$$\text{CH}_2 = \text{CH}_2 + \text{Br}_2 \longrightarrow \begin{array}{c} \text{CH}_2 - \text{CH}_2 \\ | \quad | \\ \text{Br} \quad \text{Br} \end{array} \xrightarrow[2 \text{ eq.}]{\text{NaNH}_2} \text{H} - \text{C} \equiv \text{C} - \text{H}$$

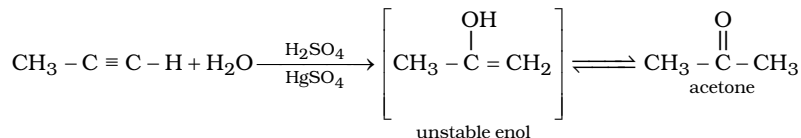
- 7.(D) Among alkanes, boiling point increase with molar mass. Among isomeric alkanes, branching decreases boiling point. Therefore, n-hexane has highest boiling point among these.

8. 
$$3\text{C}_3\text{H}_6 + 2\text{KMnO}_4 + 4\text{H}_2\text{O} \longrightarrow 3\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{OH} + 2\text{MnO}_2 + 2\text{KOH}$$

- 9.(F) Concentrated  $\text{H}_2\text{SO}_4$  is not used to dry ethylene because ethylene reacts with  $\text{H}_2\text{SO}_4$ .

- 10.(C) Ethylene absorb  $\text{H}_2\text{SO}_4$  forming  $\text{CH}_3 - \text{CH}_2\text{OSO}_3\text{H}$  and dissolve. Benzene, with warm  $\text{H}_2\text{SO}_4$ , undergo sulphonation and dissolve. Aniline, with  $\text{H}_2\text{SO}_4$ , forms anilinium sulphate salt and dissolve. Hexane, a hydrophobic molecule, does not react with  $\text{H}_2\text{SO}_4$ , remains insoluble.

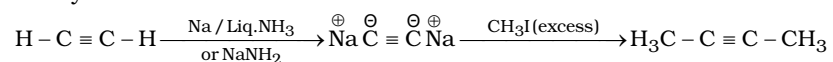
- 11.(C) Alkynes undergoes Markovnikov's addition of water in the presence of  $\text{H}_2\text{SO}_4 / \text{HgSO}_4$  :



- 12.(D) Structural formula of 1, 2-butadiene is 
$$\text{H}_2\text{C} = \text{C} = \text{CH} - \text{CH}_3$$

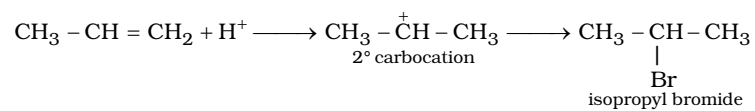
$\uparrow \quad \uparrow \quad \uparrow \quad \uparrow$   
 $\text{sp}^2 \quad \text{sp} \quad \text{sp}^2 \quad \text{sp}^3$

**13.** 2-butyne



**14. (i)** Free radical chlorination of alkane require energy which is supplied either in the form of heat or radiation.

**(ii)** Addition of HBr proceeds through carbocation intermediates.



**15.(A)** Baeyer's reagent is cold, dilute, alkaline permanganate solution, used to detect presence of olefinic bonds.