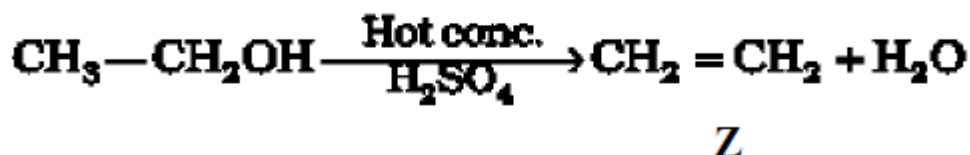


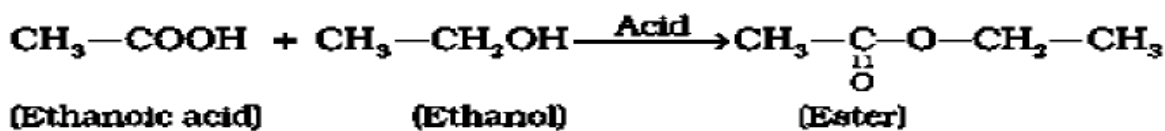
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CHAPTER 4 CARBON AND ITS COMPOUNDS

1. An organic compound X with a molecular formula C_2H_6O undergoes oxidation with in presence of alkaline $KMnO_4$ to form a compound Y. X on heating in presence of Conc. H_2SO_4 at 443K gives Z. which on reaction with H_2O in presence of H_2SO_4 gives back 'X'. 'Z' reacts with Br_2 (aq) and decolorizes it. Identify X, Y, & Z. and write the reactions involved.



2. An organic compound 'A' is widely used as a preservative in pickles and has a molecular formula $C_2H_2O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'.

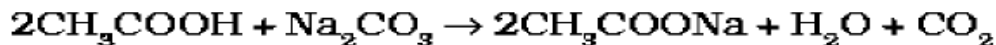
- (i) Identify the compound 'A'
- (ii) Write the chemical equation for its reaction with ethanol to form compound 'B'.
- (iii) How can we get compound 'A' back from 'B'?
- (iv) Name the process and write corresponding chemical equation.
- (v) Which gas is produced when compound 'A' reacts with washing soda? Write the chemical equation.



(iii) Esters react in the presence of an acid or a base to give back the alcohol and carboxylic acid.



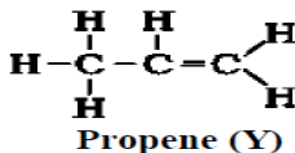
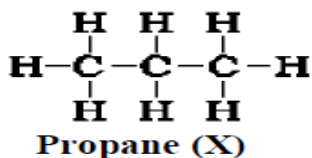
(v) CO_2



3. Hydrocarbon 'X' and 'Y' having molecular formulae C_3H_8 and C_3H_6 respectively. Both are burnt in different spatula on the bunsen flame. Indicate the color of the flame produced by 'X' and 'Y'. Identify 'X' and 'Y'. Write the structural formulae.

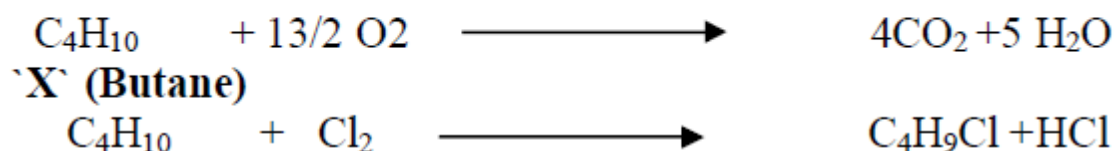
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Ans 3: 'Y' will burn with a sooty flame. So it is an unsaturated hydrocarbon.



4. A compound 'X' has molecular formula C₄H₁₀. It undergoes substitution reaction readily than addition reaction. It burns with blue flame and is present in LPG. Identify 'X' and give the balanced equation for its combustion and substitution reaction with Cl₂ in presence of sunlight.

Ans 4:

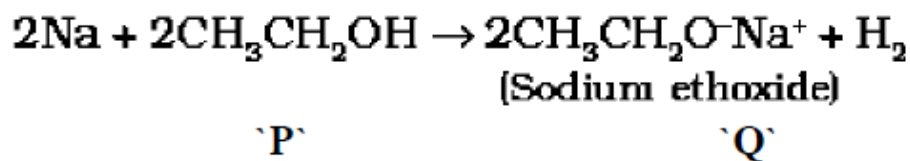


5. 'A' compound works well with hard water. It is used for making shampoos & products for cleaning clothes. A is not 100% biodegradable and causes water pollution. 'B' does not work well with hard water. It is 100% biodegradable and does not create water pollution. Identify A & B.

Ans 5 A is detergent & B is soap.

6. An organic compound P with molecular formula C₂H₆O is an active ingredient of all alcoholic drinks. It is also used in medicines such as tincture iodine, cough syrups. Identify 'P'. Drop a small piece of sodium into the test tube containing 'P'. A new compound 'Q' is formed with the evolution of colorless and odorless gas Name the gas evolved and compound 'Q' write the chemical reaction.

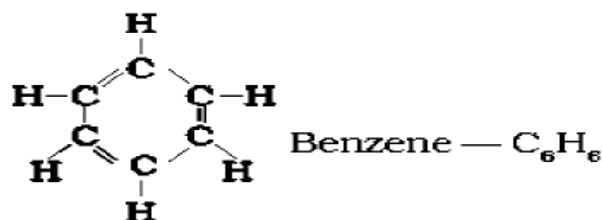
Ans 6:



7. A cyclic compound 'X' has molecular formula C₆H₆. It is unsaturated and burns with sooty flame. Identify 'X' and write its structural formula. Will it decolorize bromine water or not and why?

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Ans 7:



It does not decolorize bromine water because it does not undergo addition reaction.

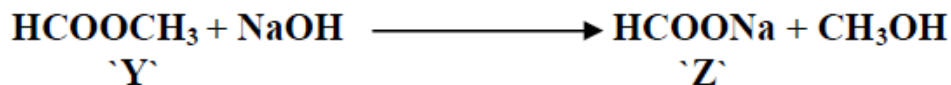
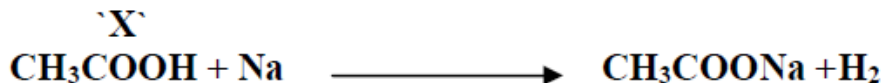
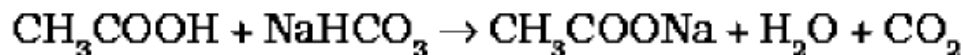
8. An organic compounds 'A' is a constituent of antifreeze and has the molecular formula C₂H₆O. upon reaction with alkaline KMnO₄, the compound 'A' is oxidized to another 'B' with formula C₂H₄O₂. Identify the compound A and 'B'. Write the chemical equation for the reaction which leads to the formulation of 'B'

Ans 8:



9. Two compounds 'X' and 'Y' have the same formula C₂H₄O₂. One of them reacts with sodium metal to liberate H₂ and CO₂ with NaHCO₃. Second one does not reacts with Na metal and NaHCO₃ but undergo hydrolysis with NaOH to form salt of carboxylic acid and compound 'Z' which is called wood spirit. Identify 'X', 'Y', and 'Z' and write chemical equation for the reaction involved.

Ans 9:



10. A compound 'X' with molecular formula C₂H₄ burns with a sooty flame. It decolourise bromine water. Identify 'X'. Will it dissolve in water or not? Will it conduct electricity in aq. Solution? Will it have high melting point or low melting point ?

Ans 10: 'X' is ethene. It will neither dissolve in water nor conduct electricity because it is a covalent compound. It has low melting point.