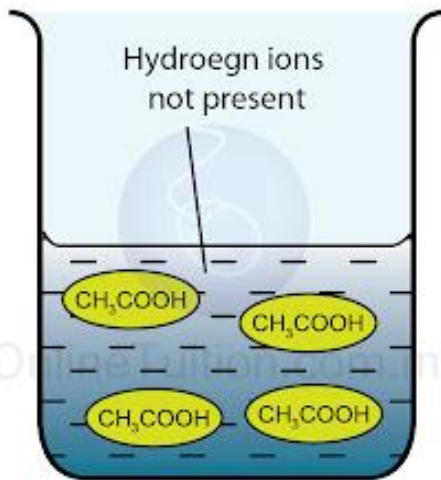


# Role of Water to Show Properties of Acids

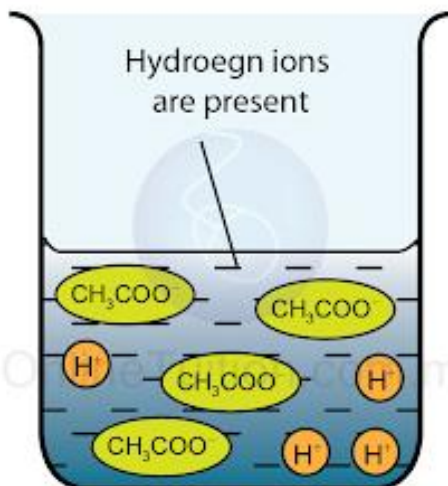
- The presence of water is essential for the formation of hydrogen ions and it is only the presence of these ions which causes acidity.
- Without water, an acid won't show the properties of acid.
- Example :-
  - Without water, the molecules of ethanoic acid do not disassociate to form hydrogen ions.
  - Without hydrogen ions, ethanoic acid does not show acidity



## Pure Ethanoic Acid (Without Water)

- Not corrosive
- pH = 7
- Does not conduct electricity
- Does not react with reactive metal
- Does not react with carbonate
- Does not react with base oxide
- Does not react with alkali

- With the presence of water, the molecules of ethanoic acid disassociate and form hydrogen ions.
- With the presence of hydrogen ions, ethanoic acid shows acidity



## Ethanoic Acid Solution (With Water)

- Corrosive
- pH < 7
- Can conduct electricity
- React with reactive metal
- React with carbonate
- React with base oxide
- React with alkali



# Role of Water to Show Properties of Alkali

- Alkali shows alkaline properties only in the presence of water.
- When water is present, ionisation of alkali produces  $\text{OH}^-$  ions that are responsible for the alkali properties
- Without the presence of water, there are no free-moving hydroxide ions.
- Therefore, in the absence of, alkalis do not show alkalinity
- Diagram below shows the illustration to investigate the role of water in showing alkaline properties of ammonia.
- The ammonia dissolve in water can turn red litmus paper to blue whereas the dry ammonia gas of the ammonia gas dissolve in propanone gives no effect to the litmus paper.

