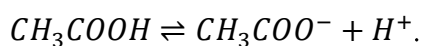




1. (a) CO doesn't have a vacant d-orbital.
2. (d) $HClO_4 + H_2O \rightleftharpoons H_3O^+ + ClO_4^-$

$\underbrace{\hspace{10em}}$
 Conjugate acid and base pair
3. (a) $FeCl_3 + 3H_2O \rightleftharpoons Fe(OH)_3 + 3HCl$. Strong acid and weak base.
4. (c) $Na_2CO_3 + 2H_2O \rightleftharpoons 2NaOH + H_2CO_3$
5. (b) Those substance accept the proton are called Bronsted base and which is donate the proton are called Bronsted acid.
 $HCO_3^- + H^+ \rightleftharpoons H_2CO_3$ Bronsted base.
 $HCO_3^- \rightleftharpoons H^+ + CO_3^{2-}$ Bronsted acid.
6. (d) Is an electron pair acceptor
7. (b) The value of pK_a for strong acid is less.
8. (c) Because it is a salt of strong base and weak acid.
9. (b) Because it is conjugate base of weak acid.



10. (d) Both (a) and (c)

Explanation (Simple & Clear):

NaOH (Sodium hydroxide) is a **strong base** because:

It ionizes completely in water (easy ionization) \rightarrow



It gives OH^- ions in solution, which makes the solution strongly basic.

11. (a) Those compound which accept H^+ is called bronstad base NO_3^- accept H^+ and form HNO_3 . So it is a base.

12. (c) NH_3

Explanation (Simple & Clear):

Proton affinity means **how strongly a substance can accept a proton (H^+)**.

Higher electron density & stronger lone pair \rightarrow higher proton affinity.

NH_3 (Ammonia) has:

A small nitrogen atom

A high electron density

A strong lone pair \rightarrow easily accepts a proton

Thus $\rightarrow \text{NH}_3 + \text{H}^+ \rightarrow \text{NH}_4^+$ (stable)

13. (a) Larger the size of halogen atom less is the back donation of electrons into empty $2p$ orbital of B.

14. (d) $\text{H}_2\text{O} + \text{NH}_3 \rightleftharpoons \text{NH}_4^+ + \text{OH}^-$

15. (d) C_2H_4

Explanation:

A **Lewis acid** is a substance that **accepts an electron pair**.

16. (b) $\text{NH}_2^- \rightleftharpoons \text{NH}^{2-} + \text{H}^+$

Conjugate acid, base pair.

17. (b) Those substances which lose proton are called acid.





e.g. strong acid have a strong tendency to donate a proton.

18. (d) Electron donating species called nucleophile. NH_3 have a lone pair of electron.
19. (a) H_2O acts as acid as it provides H^+ to NH_3 .
20. (b) $CH_3COOH + HF \rightleftharpoons CH_3COOH_2^+ + F^-$. HF gives H^+ to the CH_3COOH . So it is a conjugate base of HF .

