

STRENGTH of Acids AND BASES

① Name six strong acids and six strong bases.

Strong Acids:

Strong Base:

② Which member of each of the following pairs is the stronger acid? Circle the correct answer.

a) HIO_3 or CH_3COOH

b) H_2O_2 or HSO_3^-

c) H_2PO_4^- or HCN

③ Which member of each of the following pairs is the stronger base? Circle the correct answer.

a) HCO_3^- or PO_4^{3-}

b) HPO_4^{2-} or HS^-

c) OH^- or NH_3

d) HCOO^- or HSO^-

④ H_2Te is a stronger acid than H_2S .

a) Write the formula of the conjugate base of the above two acids. _____ and _____

b) Which conjugate base is stronger?

⑤ Find the pH of 0.5 grams of HCl dissolved in 100 ml water.

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Answers

- ① Name six strong acids and six strong bases.

Strong Acids: HCl , HBr , HI , H_2SO_4 , HNO_3 and HClO_4

Strong Base: NaOH , KOH , LiOH , $\text{Ca}(\text{OH})_2$, $\text{Sr}(\text{OH})_2$, and $\text{Ba}(\text{OH})_2$

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- ③ Which member of each of the following pairs is the stronger base? Circle the correct answer.

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- ④ H_2Te is a stronger acid than H_2S .

a) Write the formula of the conjugate base of the above two acids. HTe^- and HS^-

b) Which conjugate base is stronger?

HS^-

- ⑤ Find the pH of 0.5 grams of HCl dissolved in 100 ml water.

$$\text{Number of moles} = \frac{\text{Amount in grams}}{\text{Molar mass}}$$

$$\Rightarrow n = \frac{0.5 \text{ g}}{36.5 \text{ g/mol}} = 0.014 \text{ mol}$$

$$\text{Molarity (M)} = \frac{\text{Number of moles}}{\text{Volume of the solution}}$$

$$\Rightarrow M = \frac{0.014 \text{ moles}}{100 \times 10^{-3} \text{ L}} = 0.14 \text{ M} = [\text{H}^+]$$

$$\text{pH} = -\log[\text{H}^+] = -\log 0.14 = 0.85$$