HEAT OF NEUTRALISATION.
Answer the following questions

Question 1
In an experiment, determine the heat of neutralisation, 50 cm^3 of 1.0 $moldm^{-3}$ of sulphuric acid at 28.5°C is added to 50 cm^3 of 2.0 $moldm^{-3}$ potassium hydroxide solution which also 28.5°C in a plastic cup with cover. The mixture is then stirred and the highest temperature reached is 41.5°C.

[*Density of solution : 1.0 g cm^{-3} ; specific heat capacity of aqueous solutions ; 4.2 J g^{-1} $^oC^{-1}$*]

a) What is the mass of the solution?

g

b) What is the difference of temperature in the reaction?

°C

c) Calculate the heat change for this reaction

Q = ( ) ( ) ( ) = J = kJ

d) i. What is the number of mole of the hydrogen ion?

_____x_____ x = mol

ii. What is the number of mole of the hydroxide ion?

_____x_____ = mol

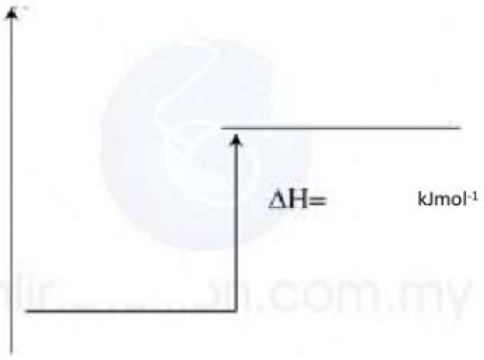
e) Write the chemical reaction for this experiment

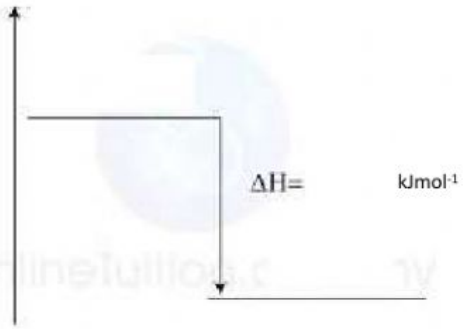
+ → +

f) Write the ionic equation for the experiment

\+ →

g) Choose the right energy level diagram. Complete the energy level diagram. (write 0 for the blank box that not chosen)





h) Why the plastic cup used in the experiment?

i) The experiment was repeated by replacing sulphuric acid with hydrochloric acid. Predict the heat of change in this experiment ? Why?

_____.

Sulphuric acid is _____ acid.

Sulphuric acid ionise in water to produce _____ mole of hydrogen ions.