54512
CHEMISTRY
PAPER 2
2024

SCORING GUIDE

ITEM 1:

S/N	Basis of assessment	Assessment Criteria	Scoring
A)	Aim of the experiment	An experiment to determine the effect of temperature on the rate of reaction of Sodium thiosulphate	02
B)	Variables of the experiment	Dependant variable (DV) Time taken for the cross to disappear. Independant variable (IV) Temperature Controlled variable (CV) Concentration of the reactants kept Constant.	03
C)	Hypothesis	Increase in temperature increases the rate of reaction of hydrochloric acid and Sodium thiosulphate	02
D)	Procedure of the experiment with relevant materials	50 cm^3 of Sodium thiosulphate were measured and put into a beaker. a white paper was marked with a cross and the beaker containing Sodium thiosulphate placed on top. 5 cm^3 of dilute hydrochloric acid were added to Sodium thiosulphate in the beaker using a burette and simultaneously the	

N	Basis of assessment	Assessment Criteria	Sch
		Clock started viewing the cross from above the mixture. The time for the cross to disappear noted and recorded. The experiment is repeated by varying the temperature of Sodium thiosulphate as shown and then adding 5 cm^3 of dilute hydrochloric acid.	04
E	Risks and Mitigation	Risk; - acid pouring on the skin or Question Mitigation; -Put on lab coat, gloves, closed shoes, cleaning the place of work Risk; Blockage of the glass apparatus eg thermometer; Mitigation; Putting back the thermometer in its case/ container after use. Risk; Inhaling of Sulphur dioxide gas/ fumes produced during the reaction Mitigation; Wearing of face Masks.	03
F	Presentation of data and recording of data		

Temperature of Solution	Volume of $Na_2S_2O_3$	Volume of HCl	Time(s)
25.0	50	5.0	110.0
45.0		5.0	70.0
55.0	50		
65.0	50	5.0	48.0
75.0	50	5.0	32.0
	50	5.0	24.0

10

N	Basis of assessment	Assessment criteria.	Scoring.
F	Data analysis and interpretation	A graph of time against temperature is plotted or a graph of $\frac{1}{\text{time}}$ (Rate) against time is plotted. NB Values of $\frac{1}{t}$ should be indicated on data recording.	04
H	Conclusion	From the data collected, it can be seen that when the temperature is high, it took shorter time for the cross to disappear and when the temperature is low, it took a longer time for the cross to disappear. Therefore; The higher the temperature of Sodium thiosulphate solution, the faster the rate of reaction	02
		Total Scores	30