

KCSE CLUSTER TESTS 11

Chemistry Paper 3

1.

i) Complete table with 12 readings. (2marks)

Incomplete table with 10 or 11 readings. (1½marks)

Incomplete table with 7-9 readings. (1mark)

Incomplete table with less than 6 readings. (0marks)

ii) Treat initial values above 400c and below 100 c as unrealistic and penalize 1 mark; tied to time i.e $t=0$.

iii) Penalize ½ mark for each reading greater than 500 from $t=30$ seconds to a maximum of 1 mark.

iv) Penalize 1 mark if all values given in the table are constant.

15 marks

2.

Use of decimals.

Accept whole numbers values or reading or reading to 0 or 5 used consistently otherwise penalize fully.

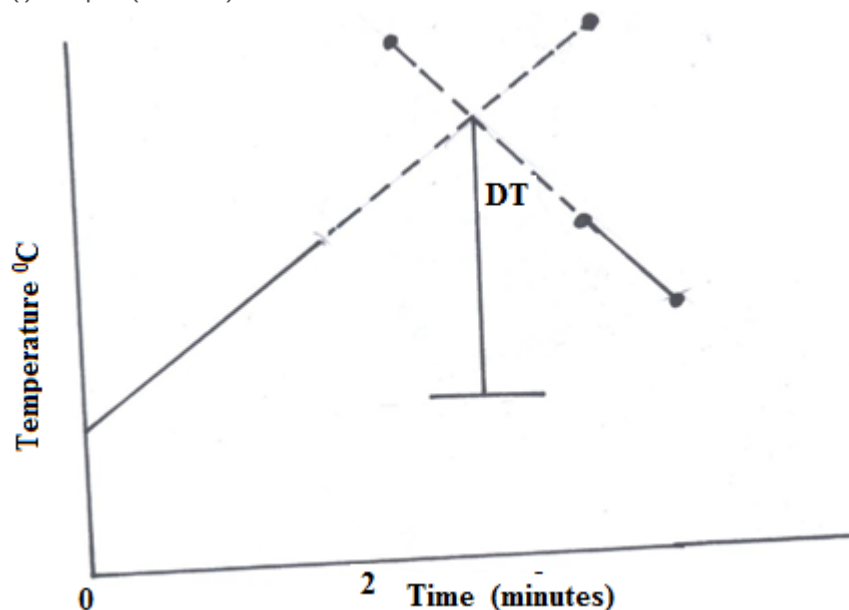
Accuracy. Compare the candidate initial temperature reading i.e. at $t=0$ with school value; and if with 2°C award 1 mark; otherwise if outside penalize fully.

Award the first ½ mark for a continuous rise in temperature up to a maximum or constant values followed by a drop.

Sample table Values are: 19.5, 22.0, 24.5, 25.0, 25.0, 26.0, 26.0, 26.0, 26.0, 26.0, 26.0, 26.0, 25.5, 25.5, 25.5.

Questions (b)

(i) Graph. (3marks)



c) **Marking:**

Labeling (both axis) (½mark) Penalize fully for inversion of axis.

Penalize fully for wrong units given; otherwise ignore units if units are omitted. Scale. (½ mark)

Conditions: Area covered by the plots should be at least ¾ of the plotting area; otherwise penalize fully. Intervals must be consistent; otherwise penalize fully. Plotting. (1mark)

Conditions Award 1 marks if at least 9 points are correctly plotted. Award ½ marks if 6-8 points are correctly plotted; otherwise award 0: Accept plots even if the axes are inverted.

d) Shape.

Award ½ mark for straight line showing progressive increase in temperature.

Award the other ½ mark for an extra plotted straight line showing a drop. Question b (ii)

For (ΔT) (1mark)

Showing T on the extrapolated graph, award ½ mark. For correct value of T award ½ mark. NOTE: The graph must be straight.

Conditions: For the values of T to be accepted, extrapolation MUST be shown correctly.

Using the data;

28.5 -19.5=90c.

c) Amount of heat.

$$\Delta H = MC\Delta T$$

$$50 \times 4.2 \times 9$$

$$= -1890 \text{ Joules}$$

Penalize ½ mark for wrong or absence of units.

Penalize ½ mark for the absence of the -ve sign on the answer.

If $130 \text{ kJ} = 1 \text{ mole}$

$$\text{Then } 1.89 \text{ kJ} \rightarrow \frac{1 \times 1.89}{130} = 0.0145 \text{ kJ}$$

ii)

Concentration.

If $50 \text{ cm}^3 \rightarrow 0.0145 \text{ KJ}$

$$\text{Then } 100 \text{ cm}^3 \rightarrow \frac{1000 \times 0.0145}{50} = 0.29 \text{ mole per litre.}$$

11 marks

3.

You provided with solid A. You are required to carry out the tests shown below and write your inferences in the spaces provided. Identify any gases given out.

TEST	OBSERVATIONS	INFERENCES
Heat strongly a spatula end full of A in a clean, dry test-tube	<u>Colourless</u> ; turns moist red litmus paper blue. Blue remains blue. Further heating the litmus paper back to red. ½	NH_4^+ <u>present</u> Acidic gas.
Place a spatula end full of A in a boiling tube. Add about 5 cm^3 of distilled water and shake. Divide the resultant mixture into four portions	<u>Colourless</u> solution	Soluble salt; <u>coloured</u> ion absent
To the first portion add Nitric acid followed by Barium Nitrate solution	No white ppt.	SO_4^{2-} <u>present</u>
To the second portion add nitric acid followed by Lead II Nitrate solution	No white <u>ppt</u>	SO_4^{2-} <u>absent</u>
To the third portion add a few drops of sodium hydroxide till in excess.	White <u>ppt</u> soluble in excess	Zn^{2+} , Pb^{2+} , Al^{3+} <u>present</u>
d) To the fourth portion add <u>aqueous ammonia</u> drop wise till excess.	White <u>ppt</u> insoluble in excess	Zn^{2+} <u>absent</u> Al^{3+} , Pb^{2+} <u>present</u>

6 marks