

[illegible]

CT = 1mk
 Trend = ½ mk
 Use of decimals = 1 mk
 1st reading = 1 2⁰C S.V ½ mk

(a) Graph
 Labeled Axis – (½ mk for each)
 Plotting – 1 mk
 Shape – 1 mk

(b) DT = 5⁰C. (1 mk)

(c) Heat change =
 Total volume of solution = 40 + 60 = 100cm³ (½ mk)
 Mass of solution = 100g
 Heat change = -100 X 4.2 X 5J (½ mk)
 = -2100 J (1 mk)
 = -2.1 KJ

(d) Heat of neutralization – 56KJ/mole.
 1 mole produces 56 KJ
 ? 2.1 KJ

(1 mk) (1 mk)

(e) molarity of NaoH
 V – 40cm³
 Moles – 0.0375
 No of moles =
 0.0375 =
 M = (1 mk)
 = 0.9375M. (1 mk)

Qn 3

TEST	OBSERVATIONS	INFERENCE
(a) Heating solid k.	A colourless gas that turns moist red litmus paper to blue is produced. (1 mk)	NH ₄ ⁺ present (1 mk)
(b) (i) Addition of NaOH	A white ppt (½ mk) which dissolves in excess. (½)	Al ³⁺ , Zn ²⁺ or Pb ²⁺ present All 3 – 1mk 2 only – ½ mk ½ mk penalty for a wrong ion

(ii) Addition of Ammonia solution	A white ppt $\frac{1}{2}$ mk which dissolves in excess $\frac{1}{2}$ mk	Al^{3+} , Zn^{2+} or Pb^{2+} present. All 3 – 1mk 2 only – $\frac{1}{2}$ mk $\frac{1}{2}$ mk penalty for a wrong ion
(iii) Addition of $\text{Ba}(\text{NO}_3)_2$ then HNO_3	A white ppt $\frac{1}{2}$ mk which dissolves in excess $\frac{1}{2}$ mk	Zn^{2+} present (1 mk)
(c) (i) Burning of solid P	Solid P burns with a sooty flame (1 mk)	$\text{C} = \text{c}$ or -C c – present $\frac{1}{2}$ mk for one
(ii) (a) Addition of universal indicator	PH of 4 (1 mk)	Solution is weakly acidic (1 mk)
(b) Addition of NaHCO_3	Effervescence present	H^+ present

The graph of temperature against time

