SERIES 30 EXAMS

CHEMISTRY 233/3 PRACTICAL MARKING SCHEME

1. (a) Table I – 5mks

Complete table –	2mks
Penalties / conditions	
Incomplete tale with at least 8 readings	1mk
Incomplete table with 5 readings	½mk
Less than 5 readings	zero
Trend	– 1mk
Significant figures and decimals	– 1mk
Accuracy	– 1mk
	05

(b) (a) Labelling – ½ mk

Penalties

(i) Penalize fully if the axes are inverted

(ii) Penalize fully if wrong units are given otherwise ignore units if not given

(iii) Penalize fully if only one axes is labeled

(b) Scale – ½mk

(i) Area covered by the plots should be more than ½ the page

Scale intervals mus be consistent

Scale chosen should be able to accommodate all the points

(c) Plotting – 2mks

(i) At least 4 pts correctly – 1mk

3 correctly – 1mk

Les than 3 – zero

(ii) Accept plots given if axes are inverted

(d) –shape (1mk)

Straight line

With +ve or –ve gradient

Reject curve – zero

(c) (i) Accept correct reading with or without showing from the graph …….1mk

(ii) If it s is hown on the graph correctly and the reading is absent or wrong, award ½mk for showing

(iii) Penalize ½mk for wrong units used otherwise ignore if units are not used or shown or given

(iv) Reject readings and showing from a wrong graph

(v) Accept reading if correct even if axes are inverted.

(d) Decrease in concentration decreases rate of reaction due to dilution

2. Table :II Treat temperature value initial temperature of 40^oC and 10^oC as unrealistic

(a) (i) Enthalpy change = mass x S.H.C x ΔT = ans. (2mks)

Mass = mass of water used 50.0g

ΔT = from table (II)

= 50 x 4.2 x ΔT = ans (2mks)

(ii) CT – 4mks)

Penalties

(i) Wrong arithmetic tied to 1st, 2nd and 3rd rows only

(ii) Inverted table

(iii) Penalize ½mk once for each for a maximum of 2mks

Accuracy – 1mk

Upto ±0.1 (1mk) ; ±0.2 (½mk) with or compared to school mk

(b)Moles of R = $\frac{1 \times \text{average volume from table III}}{1000}$ = ans.(1)

(iv) Equation – $2HCl_{(aq)} + Na_2CO_{3(aq)} \rightarrow 2NaCl_{(aq)} + CO_{2(g)} + H_2O_{(l)}$

Mole ratio

Q : R

1 : 2

$\frac{\text{ans(1)}}{2}$ ans(1)

∴Moles of Q which reacted with solution R = $\frac{\text{ans (1)}}{2}$ = ans (2) in $25cm^3$ of solution

(d) Moles of Q in procedure 1

$\frac{\text{Mass of Q}}{\text{R.M.M}} = \frac{2.65}{102} = 0.025$

(e) Actual mole sof Q which reacted

0.025 – ans (2) in d = ans (3) √1mk

Ans (3) moles produce heat in (a) √ 1mk

1 mole of Q will produce $\frac{\text{heat in a x 1KJ/mole}}{\text{Ans. (3) moles}}$ √ 1mk

3. (a)

Observation	**Inferences**
(a) Solid **dissolves completely** forming a **colourless** solution√ 1mk	Na^+, K^+, NH_4^+, Ca^{2+}, Mg^{2+}, Zn^{2+}, Al^{3+} and Pb^{2+} ions present. **(**√1mk) (*penalize if a contradiction is given)*
(i) **White ppt**. √1mk , **soluble(**√½mk) in excess NaOH solution	Al^{3+}, Zn^{2+} and Pb^{2+} present **(**√1mk)
(ii) **white ppt(**√1mk). **soluble (**√½mk) in excess ammonia	Zn^{2+} ions confirmed **(**√1mk)
(iii)**White ppt. (**√1mk) **insoluble (**√½mk) in dilute hydrochloric acid	SO_4^{2-} present **(**√1mk)
(iv) Purple colour of Potassium permanganate is not decolorized **(**√1mk)	SO_3^{2-} and S^{2-} **(**√1mk)absent. Absence of reducing agent

Observation	**Inferences**
(i) Colour changes to red/pink pH of (5-6) **(**√½mk)	Weak acid present **(**√1mk)
(ii) Effervescence **(**√½mk)	H^+, H_3O^+, COOH **(**√1mk)present (any correct one
(iii) Changes from **orange** to **green (**√1mk)	$COOH^-$ **(**√1mk)present C = C C = C

(iv) Colour changes from red/brown to green (√1mk)	Fe^{2+} ions present (√1mk)

(b)