SERIES 52 EXAMS

CHEMISTRY PRACTICAL.

233/3

MARKING SCHEME.

(a) Table 1…… **2mrks**

(i) Complete table…… **½mrk**

Penalize ½ mrk for unrealistic temperature readings less than 10^0C or above 40^0C.

(ii) Use of decimal……..... ½

Accept whole numbers or Idp.

Used consistently otherwise penalize…… ½

(iii) Accuracy…….. ½

Accept ± 1.0 of school value.

(iv) ΔT ……. ½

Penalise ……. ½ for wrong arithmetic.

(b) (i) Heat change = 40 x 4.2√1 x ΔT =Correct ans√1 (J)

Or 40 x 4.2 x ΔT = Corr.ans (KJ)

Penalise ½ mrk for " j "

(ii) $\frac{1.8}{126}$ √ ½ = 0.0143 √ ½ 4d.p.

(iii)1f Δ H1 (II) mole = ans (1)

;. Imole = $\frac{\text{1 mole x (i) √ ½}}{}$ = corr. Ans J/moles

Ans (ii)

$$\frac{\text{or ans (i)}}{\text{ans (ii)}} \times \frac{1}{1000} = \text{corr. KJ/moles} \quad \text{(2d.p)}$$

Ans (i) and (ii) must be transferred intact. Otherwise penalize ½ mrk

(c) $\Delta H_3 = \Delta H_1 + \Delta H_2$ √ ½

Correct Substitution√ 1

Correct answer.√ ½

(-) Sign must be shown otherwise penalize ½ mrk for the answer.

2. Procedure III Table III

Table III …… **5mrks.**

Distributed as follows

A. Complete table **1mrk**

Conditions

(i) Complete table with 3 titrations **1mrk**

(ii) Incomplete table with only 2 titrations done ½

(ii)Incomplete table with only one titration done **0mrk**

Penalties

(i) Wrong arithmetic / substration.

(ii) Inverted table

(iii) Unrealistic titre values > $1cm^3$ or in hundreds.

(iv) Burette readings beyond 50.0 cm^3 unless explained

Penalise ½ to a maximum of ½ i.e. penalize ½ ONCE.

(b) Use of decimal (Tied to 1st and 2nd rows only)

Accept 1 or 2 decimal places used consistently otherwise penalize fully.

If 2d.p are used the 2nd decimal place must be '0' or 5 otherwise penalize fully.

Accept inconsistency in the use of zeros.

(c) Accuracy: **1mrk**

Compare candidates correct titre value with S.V. and tick (√) the chosen value.

Conditions

(i) If at least one titre value is within ± 0.10 of S.V... value **1mrk.**

(ii) If no value is within ± 0.10 of S.V. but there is at least one within ± 0.2 of S.V. **½mrk**

(iii) If no value is within ± 0.2 onwards..0

(d) Principles of average **1mrk**.

(i) If 3 constant value average **1mrk**.

(ii) If 3 titrations are done only .2 are consistent and averaged **1mrk**

(iii) If only 2 titrations are done and are consistent and averaged **1mrk**

(iv) If 3 titrations are done but are inconsistent and are averaged **0mrk**

(v) If 3 are possible but only 2 averaged **0mrk**

(vi) If only 2 titrations are done and are inconsistent but averaged award **0mrk**

(vii If only one titration is done **0mrk**

Penalties.

(i) Penalise ½ mrk for arithmetic error if outside + 0.2 units in the 2nd d.p. of averaged value expected.

(ii) Penalise ½ mrk if no averaging is shown but answer given is correct.

(iiI) If no working is shown and the answer given is wrong penalize fully.

(iv) Accept rounding off or translocation of the answered to 2 d.p. Otherwise penalize ½ for rounding off to 1d.p. or whole number.

Accept answer if it works out exactly to 1d.p. or whole number and credit accordingly.

(e) Final accuracy (Tied to correct average titre)

Compare the candidates correct average titre with S.V.

(i) If within ± 0.10 of S.V. **1mrk**

(ii) If not within ± 0.1 but within ± 0.2 of S.V. ½

(iii) If beyond ± 0.2 award **0mrk**

CT =1

D =1

Acc=1

P.A=1

F.A=1

5

(ii) If $1000cm^3$ = 0.03 moles√ ½

$$\text{Titre} = \frac{\text{Titre} \times 0.03}{1000\surd\ ½}$$

= corr ans, (4d.p)

(iii) If 2 = ans (II)

$$5 = \frac{5 \times \text{ans} \surd \tfrac{1}{2} \text{ (II)}}{2} \quad = \text{corr} \surd \tfrac{1}{2} \text{ . ans (4d.p.)}$$

(iv) If ans. (III) = 2.3g

$$\therefore \text{ 1mole} = \frac{1 \times 2.3}{\text{Ans. (III)}} = \text{corr.} \surd \tfrac{1}{2} \text{ corr.ans without units.}$$

P. x H_2O =ans (IV)$\surd$

90 + 18x $\surd \frac{1}{2}$ x = ans. (IV)$\surd \frac{1}{2}$

or

$$18x = \text{ans. IV} - 90$$

$$x = \frac{\text{ans(IV)} - 90 \surd \tfrac{1}{2}}{18}$$

= correct ans. Rounded off to whole number.

Note the values to be transferred must be transferred intact otherwise penalize ½ mrk for wrong transfer, or penalize fully for strange figure.

Obsevations	Inferences
3.(a) White precipitate$\surd$ ½ Soluble$\surd$ ½ in excess	$Al^{3+\surd,\ \frac{1}{2}}$ $Pb^{2+\surd}$ ½ , Zn^{2+} present **2 ½**
(b) White $\surd$precipitate Soluble $\surd$ ½ in excess	$Zn^{2+}\surd$ ½ present **1 ½** Must be in (a)
(c) No effervescence$\surd$ ½ /no bubbles gas No bubbles of a gas.	$CO_3^{2+}\surd$ ½ , $SO_3^{2-}\surd$ ½ , $HCO_3^{-\surd\ \frac{1}{2}}$ **2 ½**
(d) White precipitate	$CO_3^{2-}\surd$ ½ , $SO_4^{2-}\surd$ ½ ,$SO_3^{2-}\surd$ ½ , $CL^-\surd$ ½ absent **3mks**

(e) White √ ½ precipitate dissolves

Cl^- present

Must be mentioned in (d) **1mrk**

(f) R not decolourised.

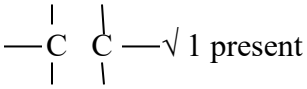
Or R remains purple

C = C, −C ≡ C, —, R, -OH

absent

All – 1mrk

Only 2 ½ **1 ½**



√ 1 present

(ii) Orange √ 1colour

remain orange

R - OH√ 1 absent **2mrks**

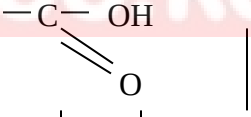
(iii) Effervescence/bubbles of a gas

H+ present

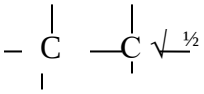
(iv) PH 5√ ½ or 6

reject range of PH

Weak√ ½ acid or



(v) Burns with blue √ ½ flame



√ ½ saturated organic compound present