SERIES 2 EXAMS

233/3
CHEMSITRY
PAPER 3

MARKING SCHEME

QUESTION 1

PROCEDURE 1

Table l

Complete table – 3 marks (1 mark for temp. reading, 2 marks for calculating solubility).
Decimal (Temperature) – 1 mark (1 or 2 d.p consistently or whole number)
Accuracy   - 1 mark (Tied to the school value 1st reading only)
Trend   - 1 mark (Temp. continuously dropping – 1 ark otherwise penalize fully)

a) Graph
   labeling axes – ½ mark
   Scale – ½ mark
   Plotting – 1 mark
   Curve – 1 mark

b) i) Accept correct reading shown from a correctly plotted graph for ½ mark, and correct reading for ½ mark otherwise penalize fully. For correct reading without showing award.

   ii) Mark as b(i) above

PROCEDURE 2

Table II
Complete table – 1 mark
Decimal   - 1 mark
 Accuracy   - 1 mark
Principles of averaging – 1 mark (average volume in (a))
Final Accuracy – 1 mark
   Total   5 marks

B (i) $\dfrac{25 \times 0.2}{1000}$ √ (½) = 0.005 moles√ (½)

ii) Mole ratio A : B

           1 : 2

        ?   0.005

          √ (½)

     $\dfrac{1 \times 0.005}{2}$ = 0.0025 moles√ (½)

iii) 0.0025 moles   average volume ((a) above)

                                 1000cm^3

       $\dfrac{1000 \times 0.0025}{\text{Average volume}}$√ (1) = correct answer (1)

iv)   6g   250cm^3

    ?   1000cm^3

      √ ½

  $\dfrac{6 \times 1000}{250}$ = 24g√ ½

       24g = correct answer in b(iii) above

       ?   1 mole

       24 x 1 √ (½) = R.M.M.√ ½

     Correct answer

NOTE- Penalty/condition

1. Penalize ½ mark for wrong units
2. All answers should be given to at least 4 d.p unless for terminating decimals to less than 4 d.p.
3. Penalize ½ mark for wrong transfer of values, otherwise penalize fully for strange figures.

QUESTION 2

Observation	Inference
a) Solid dissolves to a colourless solution√ (1)	- colour ions absent√ (1)
b) Burns with a yellow flame√ ½	- Na^+ present √ ½
c) (i) No yellow ppt formed√ ½	- Pb^{2+} absent√ ½
(ii) White ppt formed√ (1)	SO_4^{2-}, SO_3^{2-} or CO_3^{2-} present√ (1)
(iii) White ppt dissolves√ (1)	SO_3^{2-} or CO_3^{2-} present√ (1)
(iv) Acidified $K_2Cr_2O_7$ solution changes colour from orange to green√ 1	SO^{2-} present or CO_3^{2-} absent√ (1)

  NB

1. For part C (ii) award,

  1 mark for 3 ions mentioned

½ mark for 2 ions mentioned

0 mark for 1 ion mentioned

2. Penalize fully for any contradicting ions mentioned in all the inferences

3. For part C (iii) award,

1 mark for 2 ions mentioned

½ mark for 1 ion mentioned

QUESTION 3

Observation	Inference
a) Burns with blue flame or non-sooty flame/non smoky flame/non-luminous flame √ (1)	$\begin{array}{cc} \vert & \vert \\ C = C \end{array}$ or $-C \equiv C-$ $\begin{array}{cc} \vert & \vert \end{array}$ absent√ (1)
b) (i) Acidified KMnO₄ solution changes colour from purple to colourless.√ (1)	R – OH present√ (1) $\begin{array}{cc} \vert & \vert \\ \text{penalize} \quad C = C \quad \& \quad -C \equiv C- \\ \vert & \vert \end{array}$
(ii) Orange colour of bromine water persists/remains√ (1)	$\begin{array}{cc} \vert & \vert \\ C = C \end{array}$ or $- C = C -$ $\begin{array}{cc} \vert & \vert \end{array}$ Absent√ (1)
(iii) No bubbles/no effervescence√ (1)	H⁺/-COOH/H₃O⁺ absent√ (1)

NB

1. Penalize fully for any contradictory ion.

2. for b(iii) award,
   - 1 mark for 3 ions mentioned
   - ½ mark for 2 ions mentioned
   - 0 mark for 1 ion mentioned