

SERIES 20 EXAMS

**CHEMISTRY 233/3
MARKING SCHEME**

1. Table 1

	I	II	III
Final burette reading (cm ³)	37.8	37.9	38.0
Initial burette reading (cm ³)	0.0	0.0	0.0
Volume of solution B (cm ³)	37.8	37.9	38.5

CT-1

D-1

AC-1

P.A=1

F.A=1

=5mks

Find the average volume of $\sqrt{1/2}$

$$\frac{37.8 + 37.9 + 38.0}{3}$$

3

$$= 37.9 \text{ cm}^3 \quad \sqrt{1/2}$$

(a) (b) (i) $\frac{8.8}{40} \sqrt{1/2} = 0.22 \text{ M} \sqrt{1/2}$

40

(ii) Moles of B used

answer in moles (a) x 0.22

1000

correct answers

Mole ratio 1:1 $\sqrt{1/2}$

Moles of A = correct answer above

Table II

	I	II	III
Final burette reading (cm ³)	11.6	11.7	11.8
Initial burette reading (cm ³)	0.0	0.0	0.0
Volume of solution B (cm ³)	11.6	11.7	11.8

CT-1

D-1

AC-1

P.A=1

F.A=1

=5mks

(a) $\frac{11.6 + 11.7 + 11.8}{3} = 11.7 \text{ cm}^3$

(b) (i) Moles of B used

Answer in (a) x 0.22

= correct answer

1000

Mole ratio 1:1 $\sqrt{1/2}$

Moles of D = correct answer above

(ii) answer in b(i) x 250

25

Correct ans $\sqrt{1/2}$ or

Answer in b(i) x 10 $\sqrt{1/2}$

Correct ans $\sqrt{1/2}$

(iii) Answer in b(ii) procedure I x 100 $\sqrt{1/2}$

100

Correct answer $\sqrt{1/2}$ or

Answer in b(i) procedure I

Correct ans $\sqrt{1/2}$ (iv) Answer in b(iii) above –answer in b(ii) $\sqrt{1/2}$ Correct answer $\sqrt{1/2}$

I

(v) CO_3^{2-} : H^+
1 : $2\sqrt{1/2}$ Answer in (iv) above

I

2

(c) (i) Answer in (v) above $\times 106\sqrt{1/2}$ Correct ans $\sqrt{1/2}$ (ii) Answer in c(i) above $\times 100\sqrt{1/2}$

0.5

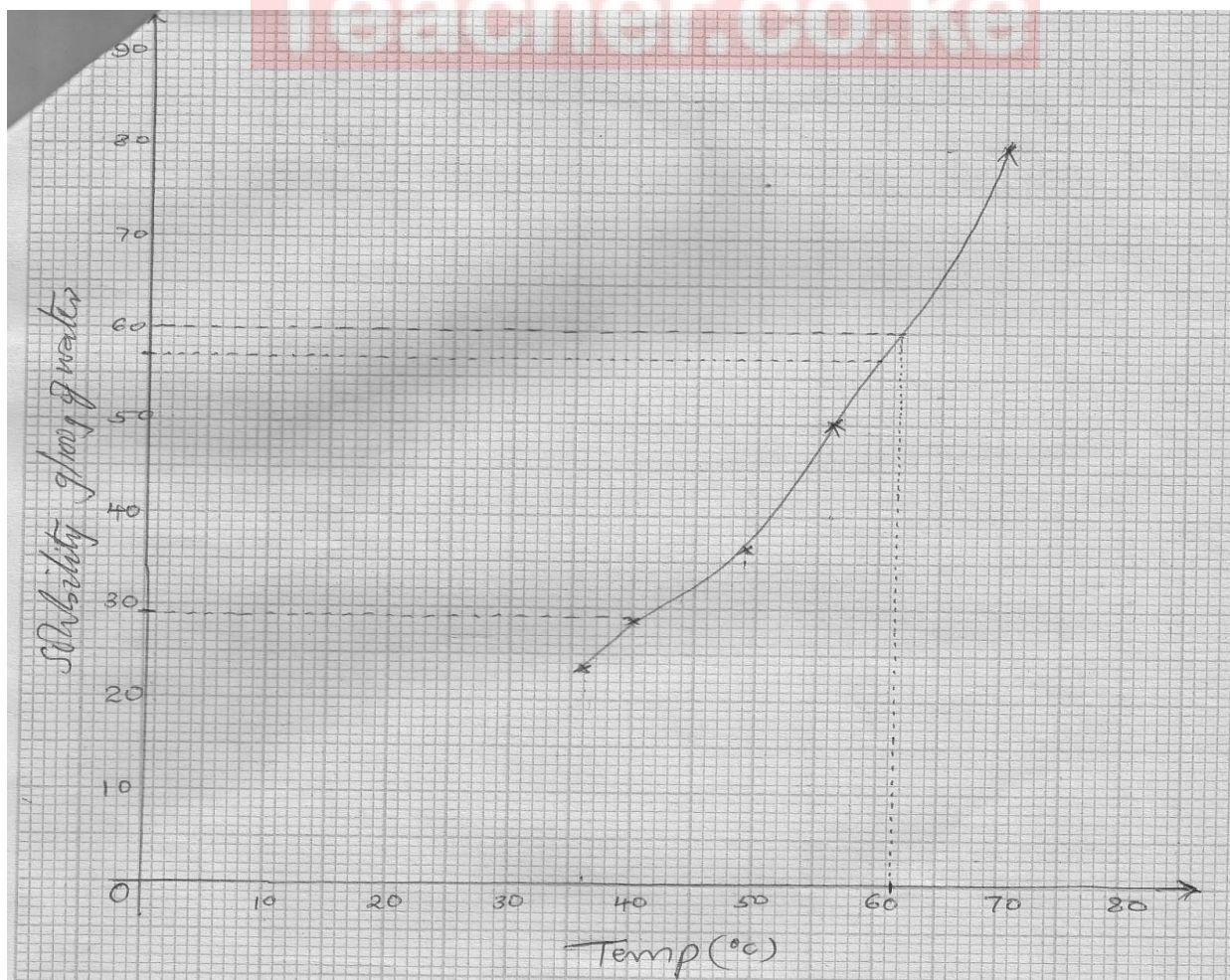
Correct answer $\sqrt{1.2}$

2.

Volume of water in boiling tube (cm^3)	Temperature in $^\circ\text{C}$ at which crystals first appear	Solubility of solid Q in g/100g of water
5	70	80.0
8	56	50.0
11	49	36.4
14	40	28.6
17	36	23.5

(b)(i) 61.5°C (ii) $57 - 29 = 28\text{g}$ $\frac{28}{100} \times 100$

57



3.	Observations White solid dissolves to form a colourless filtrate and white residue ✓ ½ (1mk)	Inferences Sparingly soluble compound ✓ (1mk)
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(ii)

Observations Orange $K_2Cr_2O_7/H^+$ turns green (1mk)	Inferences $\begin{matrix} \diagdown \\ C \\ \diagup \end{matrix} = \begin{matrix} \\ C \\ \diagdown \end{matrix} - C \equiv C - \checkmark \frac{1}{2}$ (1mk)
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(iii)

Observations Effervescence ✓ ½ of colourless gas ✓ ½ (1mk)	Inferences $\begin{matrix} //O \\ - \\ C - OH \end{matrix} \checkmark 1$ (1mk)
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(b)(i)

Observations Effervescence ✓ ½ No white ppt ✓ ½ (1mk)	Inferences $CO_3^{2-} \checkmark \frac{1}{2}$ $Pb^{2+}, Ag^+ \text{ absent } \checkmark \frac{1}{2}$ (1mk)
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(ii)

Observations White ppt soluble ✓ 1 (1mk)	Inferences $Zn^{2+} \checkmark 1$ (1mk)
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