

Mark scheme 5070/4 – Alternative to Practical November 2001

| | | |
|--------|---|---|
| 1 | Syringe | 1 |
| 2(a) | Blue | 1 |
| (b) | 3.85 g | 1 |
| (c) | White | 1 |
| (d)(i) | 2.50 g | 1 |
| (ii) | 1.35 g | 1 |
| (e)(i) | 160 | 1 |
| (ii) | 18 | 1 |
| (f)(i) | 0.0156 | 1 |
| (ii) | 0.075 | 1 |
| (g) | $X = 4.81$ (1) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (1) | 2 |
| 3(a) | Water flowing wrong round condenser | 1 |
| (b)(i) | Fractionating tube | 1 |
| (ii) | To separate vapour, mixture | 1 |
| (i) | Condenser | 1 |
| (ii) | To convert vapour to liquid | 1 |
| (d) | Components are flammable | 1 |
| (e)(i) | 80°C | 1 |
| (ii) | Benzene | 1 |
| (iii) | Temperature rises | 1 |
| 4 | (c) | 1 |
| 5 | (a) | 1 |
| 6 | (d) | 1 |
| 7 | (b) | 1 |
| 8 | (b) | 1 |
| 9(a) | 1.65 g | 1 |
| (b)(i) | Air oxidises Fe^{2+} ions to Fe^{3+} ions (1) | |
| (ii) | Hydrogen | 1 |
| (iii) | Pops in a flame | 1 |

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|---------|--|---|
| (c) | Colourless (or pale green) to purple (or pink) | 1 |
| (d) | $\begin{array}{r} 27.8 \\ 0.0 \\ \hline 27.8 \end{array} \quad \begin{array}{r} 32.1 \\ 5.7 \\ \hline 26.4 \end{array} \quad \begin{array}{r} 47.3 \\ 20.7 \\ \hline 26.6 \end{array}$ | |
| | (1) mark for each row or column | 3 |
| | Mean value = 26.5 cm ³ | 1 |
| (e) | 0.000532 | 1 |
| (f) | 0.00266 | 1 |
| (g) | 0.0266 | 1 |
| (h) | 1.49 g | 1 |
| (i) | $\frac{1.49 \times 100}{1.65} = 90\%$ | 1 |
| 10 | 1 Colourless solution | 1 |
| | 2 White ppt (1) Soluble in excess (1) | 2 |
| | 3 White ppt (1) Soluble in excess (1) | 2 |
| | 4 Aq. AgNO ₃ (1) Aq. HNO ₃ (1) White (1) ppt (1) | 4 |
| | ZnCl ₂ (1) | 1 |
| 11(a) | 80, 56, 39, 26 | |
| | All correct | 2 |
| | Solubility expt 2 = 100, expt 4 = 50 | |
| | both correct | 1 |
| (b) | Graph: all points correct | 1 |
| | Smooth curve through vertical axis | 1 |
| (c)(i) | 35 | 1 |
| (c)(ii) | 142 | 1 |
| (d) | 60 °C | 1 |
| (e) | 150g to 86g (1) = 64g (1) | 2 |

[For parts (c), (d) and (e), mark as per candidate's graph]