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CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0620 CHEMISTRY

0620/63 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** stirring / glass rod / stirrer (1)
Bunsen and / or burner (1) [2]

(b) solvents (1)
solution (1) [2]

(c) B (1)
allow: filter
C (1) [2]
allow: evaporating dish / basin

(d) evaporated / lost into air owtte / turned into steam / turned into water vapour (1) [1]

2 **(a)**

three mistakes (3)	explanations (3)
heat in wrong place / water should not be heated (1)	needs to be under flask / reactants (1)
should not pass through water (1)	gas is soluble (1)
collection wrong way / gas jar is the wrong way up / gas should be collected downwards / gas should be collected in syringe (1)	gas denser than air (1)

[6]

(b) in fume cupboard / well-ventilated area (1) [1]
ignore: goggles / masks etc.

3 **(a)** boiling points completed correctly (3),
–1 each incorrect
100, 121, 134, 139, 152, 159, 166 [3]

(b) points plotted correctly (3)
smooth curve through all points except anomalous point (1) [4]

(c) point at 4 atmos / 139°C / 4th point (1)
off curve / outlier / anomalous (1) [2]

(d) extrapolation (1)
value from graph (1)
168–170
unit °C (1) [3]

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(e) test (1)
anhydrous copper sulfate or cobalt chloride(paper) (1)
result (1)
turns blue or pink (1) [2]
ignore: original colour

4 **(a)** table of results for experiment 1

initial and final volumes and differences completed correctly (1)
15.7, 0.0 and 15.7
to 1 decimal place (1) [2]
allow: 2 decimal places

(b) table of results for experiment 2
initial and final volumes completed correctly (1)
47.3 and 15.9
differences completed correctly (1)
31.4 [2]

(c) iron / Fe (1) (II) / 2+ (1) oxidised / reacts with air / to iron(III) (1) [3]

(d) **(i)** colourless to pink / purple (1) [1]
not: clear **allow:** reverse

(ii) not an acid and alkali reaction / potassium manganate is coloured / owtte / indicator not needed / a colour change already occurs / potassium manganate acts as an indicator (1) [1]

(e) **(i)** experiment 2 (1) [1]

(ii) experiment 2 2× volume experiment 1 [1]

(iii) solution E more concentrated / stronger (1) or converse
2 × as concentrated (2) [2]

(f) half value from table result for Experiment 2 / 15.7 cm^3 (1)
half volume of E used (1) [2]

(g) advantage
easy to use / quick / convenient (1)

disadvantage
not accurate / owtte (1) [2]

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5 **(c)** no reaction / no change / no precipitate (1) [1]

(d) white (1) precipitate (1) [2]

(e) neutral (1) transition metal (ion) present (1) [2]

(f) reversible / equilibrium / neutralisation / (1)
solution returned to original colour / solution turns back to yellow (1) [2]

(g) oxygen (1) [1]

6 stated / known / same volume of hydrochloric acid (1)
use of named measuring apparatus (1)
addition of named indicator (1)
add tablets (1)
until the colour changes / pH =7 (1)
take measurement (1) e.g. number of tablets
repeat with other tablet (1)
compare / conclusion (1) e.g. brand that uses fewer tablets is most effective
allow: other correct methods including loss of mass and collection of gas

max [7]

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