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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0620 CHEMISTRY

0620/61 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** boxes completed to show stirrer / glass rod (1)
watchglass / evaporating dish (1) [2]

(b) to speed up the reaction (1) [1]

(c) correct answer 4.2 g (2)
if incorrect, evidence of 17.8 – 13.6 (1) [2]

(d) **(i)** solid / lead oxide visible / remaining (1) [1]
do not allow: mention of precipitate

(ii) filtration (1) [1]

(iii) excess (1) [1]
allow: residue

(e) Any **two** from:
evaporation / steam (1)
solid / crystals formed (1)
breakdown / decomposition of solid (1) [2]

2 **(a)** smooth curve missing anomalous point (1) [1]

(b) **composition of mixture**
double volume / 100 cm^3 of hydrogen peroxide (1)
more than 1 g of manganese(IV) oxide / powdered (1) [2]
ignore: references to water
note: double the concentration is valid for (2)

explanation
double volume of gas (1)
faster reaction (1) [2]

(c) catalyst / increase the rate of the reaction (1) [1]

(d) sketch graph less steep than original for Experiment 1 (1)
to same level (1) [2]

3 **(a)** **(i)** chromatography (1) [1]

(ii) to prevent loss / evaporation of solvent (1) [1]

(b) when the solvent is near the top of the paper / before the solvent reaches the top of the paper (1) [1]

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(c) **(i)** 4 (1) [1]

(ii) yes, one artificial dye (1)
at same height / matches (1) [2]

4 **(a)** table of results for Experiment 1
initial volume completed correctly (1)
0 or 24.4
all readings to 1 decimal place (1) [2]

(b) table of results for Experiment 2
final volume completed correctly (1)
6.1
difference correct (1) [2]

(c) **(i)** neutralisation (1) [1]
allow: acid-base

(ii) as an indicator / to show end point (1) [1]

(d) water to remove the solution A of acid (1)
acid B to remove traces of water (1) [2]

(e) **(i)** Experiment 1
ecf from readings (1) [1]

(ii) any correct comparison (1) [1]

(iii) solution B more concentrated / stronger (1) or converse
less volume was needed (1) [2]

(f) half value from table result for experiment 2 (1)
cm^3 (1) [2]

(g) advantage: easy to use / quick / convenient (1)
disadvantage: not accurate owtte (1) [2]

(h) same volume of each solution (1)
add suitable reactant (1)
expected observation (1)
comparison (1) [4]
note: e.g. 10 cm^3 of each acid (1), add strip of magnesium / named carbonate (1)
effervescence (1), more rapid bubbles means stronger acid (1)

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

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

(e) transition metal present (1)
allow: iron
water / hydrated (1) [2]

(f) hydrated (1) iron (1) (II) (1) (sulfate) [3]

6 **(a)** **(i)** gas syringe / inverted measuring cylinder in trough of water (1)
labelled (1) [2]

(ii) limewater (1)
milky (1) [2]

(b) measured volume of water (1)
in named weighed container (1)
evaporate to dryness (1)
reweigh / measure mass of solid (1)
conclusion: e.g. double the mass of residue if 500 cm^3 water used to check mass in 1000 cm^3 (1) max [4]

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