01. 0620_p20_ms_60 Q: 1

(a) tap / separating / dropping funnel; [1]
not: burette
delivery tube; [1]
gas jar; [1]
allow: measuring cylinder

(b) gas should be collected downwards / owtte [1]

(c) to remove water / to remove impurities [1]

02. 0620_s20_ms_63 Q: 4

Question	Answer	Marks
	any six from: **gas volume method** • weigh both washing powders or equal masses of both washing powders • place in suitable container (flask / boiling tube / test-tube) • add acid • to excess / until no more fizzing • collect gas • in gas syringe or by downward displacement in measuring cylinder • measure volume of gas • largest volume of gas has most sodium carbonate **OR** **mass loss method** • weigh both washing powders or equal masses of both washing powders • place in suitable container (flask / boiling tube / test-tube / beaker) • add acid • to excess / until no more fizzing • weigh mixture once acid added • weigh mixture at end • calculate mass drop • largest mass drop has most sodium carbonate	**6**

Question	Answer	Marks
	OR **titration method** • weigh both washing powders or equal masses of both washing powders • place in suitable container (flask / beaker) • dissolve in water • add named indicator (not UI) • add acid from burette • stop when indicator changes colour • record start and final reading on burette • largest volume of acid used has most sodium carbonate	

03. 0620_w14_ms_63 Q: 1

(a) suitable collection vessel, e.g. syringe / measuring cylinder, burette, test tube or gas jar in trough of water or by downward delivery (1) label (1) [2]

(b) tap / separating / dropping funnel (1) [1]

(c) reaction is fast at room temperature (1) [1]
allow: heat not needed / reacts anyway

(d) limewater (1)
turns milky / cloudy / white (1) [2]

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04. 0620_w14_ms_63 Q: 4

(c) table of results

initial temperature boxes completed correctly (1)
21, 22, 22, 19

final temperature boxes correctly completed (1)
41, 16, 11, 32

differences correct (1)
20, –6, –11, 13 [3]

(e) suitable scale – 2 cm is 5 or 10 °C (1)
all 4 bars at correct levels (2),
3 correct (1)
2 or fewer correct (0)
clear unambiguous labels, HJKL or 1, 2, 3, 4 (1) [4]

(f) to remove impurities / clean (1) [1]

(g) **(i)** Experiment 2 / J (1) [1]

(ii) Experiments 2 / J **and** 3 / K (1)
temperature decreased / energy or heat is absorbed (1) [2]

(h) **(i)** (–)5.5 (°C) (1) [1]

(ii) (+)6.5 (°C) (1) [1]

(iii) half amount of solid used (1) [1]

(i) room temperature / initial temperature / 22 °C (1)
reaction finished / all dissolved (1) [2]

(j) carbonate (1)
carbon dioxide (1)
acid (1) max [2]

(k) repeat (1)
compare results / average results / mean (1) [2]