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### 1
(a) teat/dropping pipette/dropper (1) **allow:** pipette [1]

(b) crushed ore would have larger surface area (1)
mORE zinc oxide would have formed/faster decomposition (1) [2]

(c) sulfuric (1) [1]

(d) filtration (1) [1]

(e) add magnesium (1) **allow:** electrolysis [1]

[Total: 6]

### 2
bromine (water) (1) **not:** bromide
colourless (1)
aqueous silver nitrate (1)
yellow precipitate (1)
named indicator/solution of copper salt (1)
correct colour change/pH/blue precipitate (1) [6]

[Total: 6]

### 3
(a) volumes completed correctly
0, 30, 45, 52, 56, 54, 60, 60 –1 for each incorrect [3]

(b) points plotted correctly (3) –1 for each incorrect
smooth curve (1) [4]

(c) point at 100 seconds/54 cm³/point 6 (1) off curve/ovtte (1) [2]

(d) 20 cm³ ±½ small square (1) indication on graph (1) [2]

(e) reaction finished/all peroxide decomposed ovtte (1) [1]

(f) (i) in an ice bath (1) **allow:** in a refrigerator [1]

(ii) curve less steep (1) to same level (1) [2]

[Total: 15]
4 (a) pipette/burette (1) [1]

(b) (i) methyl orange/phenolphthalein/litmus (1) not: Universal Indicator [2]

(ii) yellow/pink to orange or pink/colourless (1) [2]

(c) nitric acid (1) more volume added than sodium hydroxide (1) [2]

(d) repeat experiment (1) without indicator (1) 
evaporate solution (1) [3]

[Total: 8]

5 (c) bubbles/fizz/effervescence (1) [1]
limewater (1) milky (1) [2]

(d) (i) blue (1) precipitate (1) [2]

(ii) blue precipitate (1) 
dark/deep blue (1) solution/dissolves (1) [2]

(e) barium/calcium (1) chloride (1) not: chlorine ions [2]

[Total: 10]

6 (a) Bunsen burner (1) ignore: switch [1]

(b) labels on correct positions (1) [1]

(c) (i) bulb lights/idea of molten lead (1) [2]

(ii) bulb goes out/no fizz (1) [2]

(d) pressure of gas build up/explode owtte (1) [1]

(e) iodine formed (1) not: iodide from iodide ions (1) [2]

(f) fume cupboard/well ventilated area (1) 
allow gloves if reason specified ignore: goggles [1]

[Total: 8]
known mass/weight (1) of each fertiliser (1)
add to same amount of soil (1)
+ bean (1) water (1)
leave for specified time (1) observe plant growth/effect (1)
comparison/conclusion (1) max 7

[Total: 7]