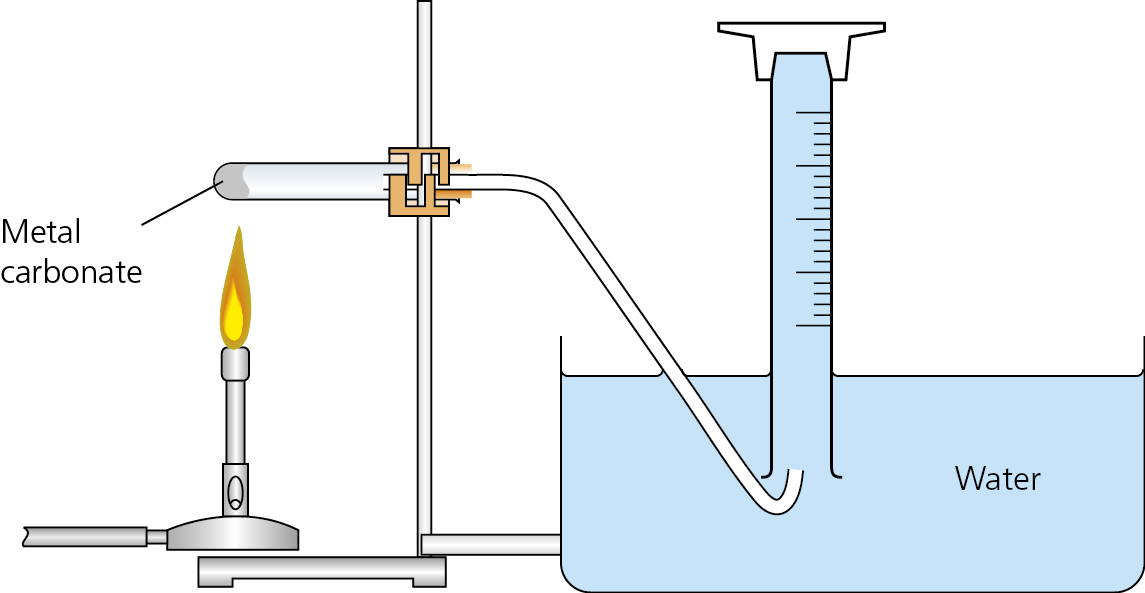
OCR AS/A-level Year 1 Chemistry A exam practice answers

1 Practical skills

**1 (a) (i)**

✓✓

**(ii)** Weigh impure MgCO3(s) and place as shown in apparatus. Heat MgCO3(s) until no more gas evolved. (Immediately remove delivery tube from water to prevent suck-back.)✓ Use volume of CO2(g) collected to calculate moles of CO2(g),✓ which is the same as the moles of pure MgCO3(g); hence calculate mass of pure MgCO3(s) ✓. Calculate % purity by comparing mass of pure and impure MgCO3(s).✓

**(iii)** CO2(g) is soluble in water. ✓

**(iv)** Collect gas in a syringe rather than by displacement of water.✓

**(b) (i)** Weigh a crucible ✓, add impure MgCO3(s) and reweigh ✓. Place crucible and contents on pipeclay triangle and heat for 5 minutes ✓, cool and weigh ✓. Repeat heating, cooling and weighing until constant mass is achieved. ✓

**(ii)** The accuracy of a 2-decimal-place balance is +/− 0.05 g. ✓ The crucible has to be weighed before and after heating so the error is 2 × 0.05 = 0.1 g; hence % error is 50%. ✓

**2 (a)** Graph — axes labelled ✓ and plotted using appropriate size/scale ✓. Tangent drawn correctly ✓ and gradient calculated correctly ✓

**(b) (i)** mass of Li = 12.68 − 12.56 = 0.12 g✓

error = 0.005 × 2 = 0.01 g ✓

% error = 8.3%

**(ii)** volume of H2 % error = (1/240) × 100 = 0.42%

**(c)** The largest error is the weighing of the Li ✓. Use a more accurate balance ✓to reduce the percentage error ✓ or use a greater mass of Li ✓, which would also reduce the % error ✓. There are also important procedural errors in that when the Li is added to the conical flask H2(g) would be lost before the stopper is replaced (any suggestion to remedy this is acceptable)/lithium reacts with the air and would be coated in a layer of lithium oxide/nitride.