Apparatus

For each candidate

1	1 x 50 cm^3 burette 1 x stand and burette clamp 1 x small funnel for filling the burette 1 x 25 cm^3 pipette 1 x pipette filler 1 x 250 cm^3 beaker 2 x Styrofoam cup 1 x thermometer (–10 °C to 50 °C) methyl orange indicator indicator [place with bench reagents] 2 x 250 cm^3 conical flask
2	1 x test-tube holder (wooden instead of plastic) 1 x boiling-tube 1 x spatula 1 x Bunsen burner and lighter 1 x wooden tongs access to a balance weighing to 0.1 g or better
3	2 x test-tube 1 x boiling-tube 2 x dropping pipette 2 x spatula 1 x 50 cm^3 beaker 1 x glass rod wooden splints distilled water additional test-tubes and dropping pipettes should be available typical inorganic QA bench reagents: NaOH(aq), $BaNO_3$(aq), red litmus paper

Chemicals Required

	label	per candidate	identity	notes (hazards given in this column are for the raw materials)	reference
1	**FA 1**	230 cm^3	1.8 mol dm^{-3} potassium hydrogen carbonate, $KHCO_3$		2016 PU1 H2 Expt 7
	FA 2	130 cm^3	1.0 mol dm^{-3} of potassium hydroxide, KOH		
	FA 3	100 cm^3	1.6 mol dm^{-3} of hydrochloric acid, HC*l*		
2	**FA 4**	5 g	a mixture of $NaHCO_3$ and Na_2CO_3	Prepare a mixture containing 3 parts by mass $NaHCO_3$ and 1 part by mass anhydrous Na_2CO_3. The anhydrous Na_2CO_3 should be dried before use by heating in an oven at 110 °C and cooled in a desiccator. **Do not heat the $NaHCO_3$.** **Ensure the mixture is as uniform as possible.** Each candidate should be provided with 5 g of the mixture in a labelled, capped container.	2010 Nov 9701/34
3	**FA 5**	1 g	ammonium ferric sulfate, $NH_4Fe(SO_4)_2{\cdot}12H_2O$ / $NH_4[Fe(H_2O)_6](SO_4)_2{\cdot}6H_2O$	Pure solid, keep dry. Solid is chunky and should be broken up to smaller bits. Each candidate should be provided with 1-1.2 g of the mixture in a labelled, capped container.	–
	zinc powder	0.5 g (sufficient for about 2 spatulas)	zinc powder	Pure solid, keep dry.	
	barium nitrate	for QA (about 3 cm^3)	0.1 mol dm^{-3} barium nitrate	Dissolve 26.1g of $Ba(NO_3)_2$ in each dm^3 of solution.	