GCSE and IGCSE Chemistry: Acids, Bases and Salts Worksheet - Mark Scheme

Year 10-11 · GCSE (AQA 4.4.2) and Cambridge IGCSE 0620 topic 8 · Exam-style questions

Section A: Acids, alkalis and pH [17 marks]

1(a)	H^+; OH^-	**2**
1(b)	pH; neutral	**2**
1(c)	neutralisation; salt	**2**
2	Litmus: red; blue. Methyl orange: red; yellow. Phenolphthalein: colourless; pink. Guidance: 1 mark for each correct box.	**6**
3	Strong acid: 0-1 (1). Weak acid: 4-6 (1). Strong alkali: 13-14 (1).	**3**
4	A strong acid ionises completely in water (1). A concentrated acid has many acid particles in a given volume (1).	**2**

Section B: Reactions of acids [14 marks]

5	magnesium chloride + hydrogen; copper sulfate + water; sodium nitrate + water; calcium chloride + water + carbon dioxide. Guidance: 1 mark for each salt and 1 mark for each other correct product (e.g. hydrogen).	**8**
6	$HCl(aq) + NaOH(aq) \longrightarrow NaCl(aq) + H_2O(l)$ (3). 1 mark for correct formulae, 1 mark for balancing, 1 mark for state symbols.	**3**
7	$H^+(aq) + OH^-(aq) \longrightarrow H_2O(l)$	**1**
8	Bubble the gas through limewater (1); it turns cloudy / milky (1).	**2**

Section C: Making salts [16 marks]

9	Warm dilute sulfuric acid (1). Add copper oxide in small amounts until excess is present / no more dissolves (1). Filter to remove the excess copper oxide (1). Heat the filtrate to evaporate some water until saturated / crystals start to form (1). Leave to cool and crystallise (1). Filter and dry the crystals between filter paper (1).	**6**
10	To make sure all the acid has reacted (1) so the solution contains only copper sulfate (1).	**2**
11	Measure 25 cm^3 of alkali into a conical flask using a pipette (1). Add indicator (1). Add acid from a burette until the colour changes (1). Repeat without indicator using the same volume of acid (1). Evaporate the solution to crystallise (1).	**5**
12	chlorides; sulfates; nitrates. Guidance: 1 mark each.	**3**

Section D: Solubility and salt rules [8 marks]

13	(a) All soluble (1). (b) All soluble (1). (c) Insoluble (except Group 1) (1). (d) Insoluble (1).	**4**
14	Mix lead nitrate solution with sodium sulfate solution (1). A white precipitate forms (1). Filter, wash with distilled water and dry (1). Precipitation reaction (1).	**4**

Total: 55 marks. Accept any scientifically correct alternative wording.