

GCSE Chemistry A (Gateway Science)
J248/03 C1-C3 and C7 Higher (Higher Tier)

Question Set 12

- 1 A student has a solution of hydrochloric acid, HCl, and a solution of sodium hydroxide, NaOH.

He wants to make a pure, dry sample of sodium chloride.

- (a) Describe how he can do this.

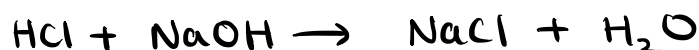
Include the apparatus he should use and his method.

[4]

(see below)

- (b) Write a **balanced symbol** equation for the reaction.

[1]



- (c) The student also investigates other reactions.

The table shows the salts he can make from different starting materials.

Complete the table.

Acid used	Other starting material	Salt made
Sulfuric acid	Copper oxide	copper sulfate
nitric acid	Zinc carbonate	Zinc nitrate
Hydrochloric acid	magnesium oxide	Magnesium chloride

[3]

- (d) What **type** of reaction happens when sulfuric acid reacts with copper oxide?

[1]

Neutralisation

Total Marks for Question Set 12: 9

1. a) Carry out a titration.

- Put acid in burette
- Pipette a known volume of sodium hydroxide into flask
- Use an universal indicator or pH meter
- Add acid to sodium hydroxide (dropwise near the endpoint) until colour of indicator changes from purple to green or pH decreases from 14 to 7
- Repeat to get an accurate value
- (- Repeat again with no indicator)
- Heat the salt solution to evaporate off the water
- Let it cool and dry to allow it to crystallise

The Periodic Table of the Elements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
1 H hydrogen 1.0	2 He helium 4.0	3 Li lithium 6.9	4 Be beryllium 9.0	5 B boron 10.8	6 C carbon 12.0	7 N nitrogen 14.0	8 O oxygen 16.0	9 F fluorine 19.0	10 Ne neon 20.2
11 Na sodium 23.0	12 Mg magnesium 24.3	13 Al aluminum 27.0	14 Si silicon 28.1	15 P phosphorus 31.0	16 S sulfur 32.1	17 Cl chlorine 35.5	18 Ar argon 39.9	19 K potassium 39.1	20 Ca calcium 40.1
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4
55 Cs caesium 132.9	56 Ba barium 137.3	57-71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1
87 Fr francium	88 Ra radium	89-103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium
119 K potassium 39.1	120 Ca calcium 40.1	121 Sc scandium 45.0	122 Ti titanium 47.9	123 V vanadium 50.9	124 Cr chromium 52.0	125 Mn manganese 54.9	126 Fe iron 55.8	127 Co cobalt 58.9	128 Ni nickel 58.7
137 Rb rubidium 85.5	138 Sr strontium 87.6	139 Y yttrium 88.9	140 Zr zirconium 91.2	141 Nb niobium 92.9	142 Mo molybdenum 95.9	143 Tc technetium	144 Ru ruthenium 101.1	145 Rh rhodium 102.9	146 Pd palladium 106.4
157 Cs caesium 132.9	158 Ba barium 137.3	159 La lanthanum 138.9	160 Ce cerium 140.1	161 Pr praseodymium 140.9	162 Nd neodymium 145.0	163 Pm promethium	164 Sm samarium 150.4	165 Eu europium 152.0	166 Gd gadolinium 157.3
187 Fr francium	188 Ra radium	189-203 actinoids	184 Rf rutherfordium	185 Db dubnium	186 Sg seaborgium	187 Bh bohrium	188 Hs hassium	189 Mt meitnerium	190 Ds darmstadtium
217 Ts tennessine 289.1	218 Og oganesson 289.1	219 Nh nihonium 289.1	220 Fl flerovium 289.1	221 Mc moscovium 289.1	222 Lv livermorium 289.1	223 Uu unbinilium 289.1	224 Uub unbihunium 289.1	225 Uut unbinium 289.1	226 Uuq unquadium 289.1

Key
atomic number
Symbol
name
relative atomic mass

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