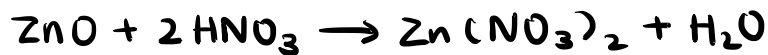


GCSE Chemistry A (Gateway Science)
J248/03 C1-C3 and C7 Higher (Higher Tier)

Question Set 27

1 Zinc nitrate can be made by reacting zinc oxide with nitric acid, HNO_3 .

(a) Write a **balanced symbol** equation for this reaction.



[2]

(b) A student suggests this method for preparing zinc nitrate.

1. Measure 50 cm^3 of dilute nitric acid into a beaker.
2. Add one spatula measure of zinc oxide.
3. Heat the mixture until crystals of zinc nitrate made.

Her method will **not** make a pure dry sample of zinc nitrate.

What improvements should she make to the method to make sure that:

- the reaction is complete
- the zinc nitrate can be separated from the nitric acid and the zinc oxide?

Explain your answer.

[4]

(c) Describe why this reaction is a neutralisation reaction.

Because nitric acid is an acid and zinc oxide is a base forming zinc nitrate (salt) and water.

[2]

Total Marks for Question Set 27: 8

- i. b) - Add excess of zinc oxide to ensure all nitric acid is reacted.
- Filter off excess zinc oxide
 - Evaporate off some of the water
 - Let it cool and dry to allow crystallisation

The Periodic Table of the Elements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(0)																												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																		
Key																																			
atomic number																																			
Symbol																																			
name																																			
relative atomic mass																																			
1	H hydrogen 1.0	2	He helium 4.0															10	Ne neon 20.2	18	Ar argon 39.9														
3	Li lithium 6.9	4	Be beryllium 9.0															8	O oxygen 16.0	9	F fluorine 19.0	16	S sulfur 32.1	17	Cl chlorine 35.5	36	Kr krypton 83.8								
11	Na sodium 23.0	12	Mg magnesium 24.3															6	C carbon 12.0	7	N nitrogen 14.0	15	P phosphorus 31.0	16	S sulfur 32.1	17	Cl chlorine 35.5	34	Se selenium 79.0	54	Xe xenon 131.3				
19	K potassium 39.1	20	Ca calcium 40.1	21	Sc scandium 45.0	22	Ti titanium 47.9	23	V vanadium 50.9	24	Cr chromium 52.0	25	Mn manganese 54.9	26	Fe iron 55.8	27	Co cobalt 58.9	28	Ni nickel 58.7	29	Cu copper 63.5	30	Zn zinc 65.4	31	Ga gallium 69.7	32	Ge germanium 72.6	33	As arsenic 74.9	34	Se selenium 79.0	35	Br bromine 79.9	36	Kr krypton 83.8
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	47	Ag silver 107.9	48	Cd cadmium 112.4	49	In indium 114.8	50	Sn tin 118.7	51	Sb antimony 121.8	52	Te tellurium 127.6	53	I iodine 126.9	54	Xe xenon 131.3
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	79	Au gold 197.0	80	Hg mercury 200.6	81	Tl thallium 204.4	82	Pb lead 207.2	83	Bi bismuth 209.0	84	Po polonium	85	At astatine	86	Rn radon
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	111	Rg roentgenium	112	Cn copernicium	113		114	Fl flerovium	115		116	Lv livermorium	117		118	

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