

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

**Question Set 11**

1 Magnesium is an element. It is solid at room temperature.

(a) (i) Solid magnesium cannot be compressed.

Why? The particles in solid are closely packed together (touching each other). Hence solid Mg cannot be compressed because there is no place for particles to move. [1]

(ii) Solid magnesium cannot flow, but liquid magnesium can flow.

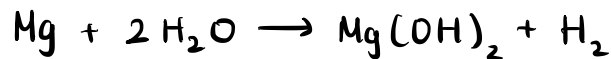
Explain why. All particles in solid are fixed in position and closely packed together thus they vibrate instead. However, particles in liquid can move past each other (flow) as forces between particles in a liquid are less than in a solid. [3]

(iii) Magnesium gas completely fills any container it is put in.

Explain why. Particles are moving quickly in all directions and as far apart as possible (spread out). Because there are very weak forces between particles. [2]

(b) Magnesium reacts with water. Magnesium hydroxide,  $\text{Mg}(\text{OH})_2$ , and hydrogen,  $\text{H}_2$ , are made.

Write a balanced symbol equation for this reaction. [2]



(c) Magnesium nitrate has the formula  $\text{Mg}(\text{NO}_3)_2$ .

Calculate the relative formula mass of magnesium nitrate.

$$24.3 + (14 + 16 \times 3) \times 2 = 148.3 \quad \text{Answer} = \dots\dots\dots 148.3 \quad [1]$$

**Total Marks for Question Set 11: 9**

# The Periodic Table of the Elements

(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	2																
1 H hydrogen 1.0																	
3	4																
Li lithium 6.9	Be beryllium 9.0																
11	12																
Na sodium 23.0	Mg magnesium 24.3																
19	20																
K potassium 39.1	Ca calcium 40.1																
37	38																
Rb rubidium 85.5	Sr strontium 87.6																
55	56																
Cs caesium 132.9	Ba barium 137.3																
87	88																
Fr francium	Ra radium																
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Sc scandium 45.0	Ti titanium 47.9	V vanadium 50.9	Cr chromium 52.0	Mn manganese 54.9	Fe iron 55.8	Co cobalt 58.9	Ni nickel 58.7	Cu copper 63.5	Zn zinc 65.4	Ga gallium 69.7	Ge germanium 72.6	As arsenic 74.9	Se selenium 79.0	Br bromine 79.9	Kr krypton 83.8		
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Y yttrium 88.9	Zr zirconium 91.2	Nb niobium 92.9	Mo molybdenum 95.9	Tc technetium	Ru ruthenium 101.1	Rh rhodium 102.9	Pd palladium 106.4	Ag silver 107.9	Cd cadmium 112.4	In indium 114.8	Sn tin 118.7	Sb antimony 121.8	Te tellurium 127.6	I iodine 126.9	Xe xenon 131.3		
57-71 lanthanoids	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
	Hf hafnium 178.5	Ta tantalum 180.9	W tungsten 183.8	Re rhenium 186.2	Os osmium 190.2	Ir iridium 192.2	Pt platinum 195.1	Au gold 197.0	Hg mercury 200.6	Tl thallium 204.4	Pb lead 207.2	Bi bismuth 209.0	Po polonium	At astatine	Rn radon		
89-103 actinoids	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
	Rf rutherfordium	Db dubnium	Sg seaborgium	Bh bohrium	Hs hassium	Mt meitnerium	Ds darmstadtium	Rg roentgenium	Cn copernicium	Fl flerovium	Lv livermorium						

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