

MARK SCHEME

GCSE

CHEMISTRY

AQA - COMBINED SCIENCE

C1 - TEST 1

ATOMIC STRUCTURE AND THE PERIODIC TABLE

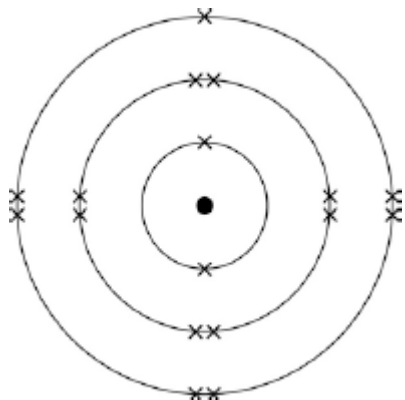
Beginner

Mark schemes

1.	(a) (i)	7		1
	(ii)	-1		1
	(iii)	neutrons		1
	(b)	number of protons		1
	(c)	atom Y		1
	(d) (i)	Ne		
		<i>allow neon</i>		1
	(ii)	has a full outer shell		
		<i>allow in Group 0</i>		
		<i>allow a noble gas</i>		
	or			
	full outer energy level			
	<i>allow the shells are full</i>			
	or			
	has 8 electrons in its outer shell			
	<i>ignore in Group 8</i>			
			1	
			[7]	
2.	(a)	electron		1
	(b) (i)	5		1
	(ii)	boron		
		<i>accept B</i>		1
	(c) (i)	11		1
	(ii)	neutrons		1
				[5]

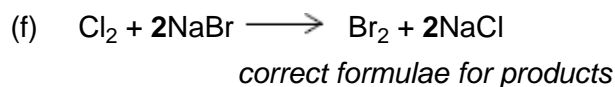
- 3.** (a) any **two** from:
- hydrogen is in group 1 on Newlands table
 - fluorine / chlorine / halogens are in group 1 on Newlands table
 - alkali metals are in group 2 on Newlands table
- allow converse arguments relating to modern table*
allow lithium / sodium / potassium for alkali metals
- 2
- (b) undiscovered
- 1
- (c) atomic number
- 1
- (d) **D**
- 1
- E**
- 1
- A**
- 1
- must be in this order*
- (e) has a complete outer shell of electrons
- allow because has a stable arrangement of electrons*
- 1
- (f) noble gases
- 1
- [9]**
- 4.** (a) the melting point increases
- 1
- (b) 337 °C
- allow an answer in the range 278 °C to 337 °C*
- 1
- (c) bromine
- 1
- (d) Group 7
- 1

(e)



7 electrons in outer shell

1



1

correct balancing

1

(g) fluorine

1

(because it is) more reactive than chlorine

allow because it is the most reactive element

1

[9]

5.

(a) Chemical properties

1

(b) three / 3

1

(c) They all have a stable arrangement of electrons

1

(d) less dense than water

allow lighter than water

1

gas / hydrogen produced

1

an alkali / hydroxide is produced

1

sodium is more reactive than lithium

1

[7]

- 6.** (a) atomic weights
must be in this order 1
- electrons 1
- proton numbers 1
- (b) (i) H/hydrogen
allow H₂ or h 1
- (ii) one / 1
allow alkali metals 1
- (iii) Potassium (K) 1
- (iv) Iron has a higher density than potassium 1
- Iron forms ions that have different charges 1
- (c) any **three** from:
 - melts
 - fizzes / bubbles / effervesces
allow gas produced
 - sodium floats
 - size of the sodium decreases
allow dissolves / disappears
 - sodium moves
allow two marks for moves around on the surface of the water
 3
- [11]**

- 7.** (a) Y 1
- (b) W 1
- (c) V 1
- (d) W 1
- (e) X 1

[5]

8.	(a) groups	1	
	(b) it is a non-metal <i>allow it is not a metal</i>	1	
	(c) to the right of column 7 / Group 7 <i>accept in Group 0</i> <i>ignore Group 8 / noble gases</i>	1	
	(d) (atomic) number <i>allow proton number</i>	1	[4]
9.	(a) NN linked to element	1	
	OCO linked to compound	1	
	(b) electron	1	
	nucleus <i>must be correct order</i>	1	
	(c) (reacts with) oxygen	1	
	to produce water <i>must be names</i> <i>accept hydrogen oxide</i> <i>allow steam</i>	1	[6]
10.	(a) number	1	
	0 <i>allow 8</i>	1	
	(b) beryllium or magnesium or strontium or barium or radium <i>allow correct symbols</i>	1	

- (c) (i) an alkali metal 1
- (ii) a transition metal 1
- (d) for undiscovered elements
- accept so elements with similar properties were in the same groups*
- accept so elements fitted the pattern of properties* 1

[6]

11.

- (a) (i) Na
- allow sodium* 1
- (ii) Cu
- allow copper* 1
- (iii) C
- allow carbon* 1
- (iv) He
- allow helium* 1
- (b) H
- allow hydrogen*
- do not allow H₂* 1

[5]