

# MARK SCHEME

# GCSE

## CHEMISTRY

## AQA - TRIPLE SCIENCE

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C1 - TEST 1

ATOMIC STRUCTURE

Beginner

## Mark schemes

- 1.** (a) (i) Proton 1
- (ii) Neutron 1
- (b) In order of increasing atomic number 1
- (c) (i) 9 1
- (ii) Gas 1
- (d) (i) gains (one) electron 1
- (to gain a) full outer energy level **or** noble gas configuration  
*allow because it has seven outer electrons* 1
- (ii) add sodium hydroxide (solution)  
*allow ammonia (solution) or ammonium hydroxide or any other soluble hydroxide or flame test* 1
- (forms a) blue precipitate  
*second mark dependent on suitable reagent being added*  
*allow blue-green / blue / green if flame test given* 1
- [9]
- 2.** (a) **B** 1
- (b) **D** 1
- (c) **E** 1
- (d) **C** 1
- (e)  $92.5 \times 6$  **and**  
 $7 \times 7.5$  1
- $$\frac{607.5}{100}$$
 1

6.075

1

6.08

1

*allow 6.08 with no working shown for 4 marks*

**[8]**

**3.**

(a) (i) E

1

(ii) C

1

(iii) A

1

(b) (i) quickly melted

*allow melts in contact with water,*

*allow bp 100 °C (of water) shows mp is low*

*ignore one other piece of information*

1

(ii) easily cut

*ignore one other piece of information*

1

(iii) effervescence / fizzing / bubbling

*ignore named gas*

*ignore one other piece of information*

1

**[6]**

**4.**

(a) (i) 7

1

(ii) -1

1

(iii) neutrons

1

(b) number of protons

1

(c) atom Y

1

(d) (i) Ne

*allow neon*

1

- (ii) has a full outer shell  
*allow in Group 0*  
*allow a noble gas*

**or**

full outer energy level  
*allow the shells are full*

**or**

has 8 electrons in its outer shell  
*ignore in Group 8*

1

[7]

5.

(a) Y

1

(b) W

1

(c) V

1

(d) W

1

(e) X

1

[5]

6.

(a) 1

*must be in this order*

1

very small

*accept negligible, 1 / 2000*

*allow zero*

1

(b) The mass number

1

(c) C

1

- (d) (i) 2 1
- (ii) 3 1
- (e) (i) 28 1
- (ii) 42.9  
*accept ecf from (e)(i)*  
*accept 42 - 43* 1
- (f) (i) 0.9 1
- (ii) any **one** from:  
 • accurate  
 • sensitive  
 • rapid  
 • small sample. 1
- [10]**

- 7.** (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 H<sub>2</sub>* 1
- [5]**

- 8.** (a) (i) Neutron (top label) 1
- Electron (bottom label) 1
- (ii) 13 1

(iii) electrons 1

(b) (i) compound 1

hydrogen 1

bond 1

(ii) C<sub>4</sub>H<sub>10</sub> 1

[8]

**9.** (a) (i) an electron 1

(ii) a neutron 1

(iii) 11 1

(iv) boron 1

(b) (i) GH<sub>3</sub> 1

(ii) covalent 1

[6]

**10.** (a) proton 1  
*ignore ±*

electron very small owtte

*allow zero*

*allow values from 1 / 1800 to 1 / 2000 or 0.0005 – 0.00055*

1

(b) 8 1

16 1

(c) (i) Isotopes 1

(ii) <sup>18</sup><sub>8</sub>O 1

- (d) (i) compound 1
- (ii) H-O-H 1
- (iii) covalent 1
- (iv) sharing 1
- [10]**

**11.**

- (a)  $-220(^{\circ}\text{C})$  1
- accept without unit*  
*do **not** credit if no minus sign*  
*no tolerance allowed*

- (b) iodine 1
- allow I or I<sub>2</sub>*

- (c) increase down (the groups) 2
- N.B. must be **one** comparative or superlative for either position in group or melting point to obtain 2 marks*  
*e.g. accept lowest in group has highest melting point for 2 marks*  
*accept highest in group has lowest melting point for 2 marks*  
*accept highest mass numbers or proton numbers or atomic numbers have highest melting point for 2 marks*  
*allow F has lower **or** lowest melting point for 1 mark*  
*allow 'Increase from F to 1', i.e. referring to graph rather than periodic table for 1 mark*  
*F has a low melting point no marks*

- (d) brittle 1
- poor conductor of electricity 1
- maximum 1 mark if three boxes ticked*  
*no marks if all four boxes ticked*

**[6]**