

MARK SCHEME

GCSE

CHEMISTRY

AQA - COMBINED SCIENCE

C2 - TEST 1

BONDING, STRUCTURE AND PROPERTIES OF MATTER

Beginner

Mark schemes

- 1.** (a) CH_4
4 should be below halfway up H / tail of 4 below the dotted line 1
- (b) molecule 1
- (c) covalent 1
- [3]**
- 2.** (a) C_3H_8
capital letters for symbols numbers must be halfway or lower down the element symbol
allow H_8C_3
*do **not** allow 3:8 or C_3 and H_8* 1
- (b) (i) electron 1
- (ii) covalent 1
- (c) low **and** small
both for 1 mark 1
- [4]**
- 3.** (a) (i) nucleus 1
- (ii) neutron 1
- (iii) electron 1
- (b) (i) 6 1
- (ii) 12 1
- (c) $^{14}_6\text{C}$ 1
- (d) (i) CH_4 1

(ii) compound

1

(iii) covalent

1

[9]

4.

(a) 1 / one

1

(b) (i) protons

1

(ii) neutrons

1

(iii) 7

1

(c) (i) losing

1

(ii) a positive

1

(iii) electrostatic

1

(d) high melting points

1

strong bonds

1

(e) (i) 58.5

1

(ii) mole

1

(f) very small (particles) **or**

ignore tiny / small / smaller / microscopic etc.

1-100nm in size **or**

(particle with a) few hundred atoms

1

[12]

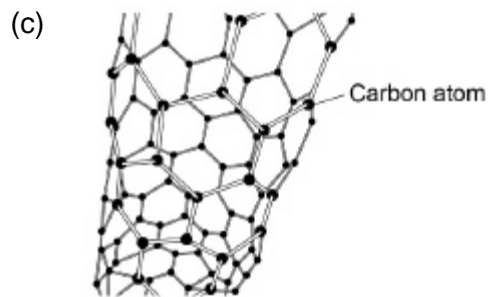
5.

(a) carbon

1

(b) conduct electricity

1



1

- (d) carbon
hydrogen

either order

2

- (e) a polymer

1

- (f) slide

1

[7]

6.

- (a) carbon

1

- (b) layers

1

have weak forces / attractions / bonds between them **or** are only held together weakly

second mark must be linked to layers

or

can slide over each other **or** separate (1)

1

- (c) covalent

1

[4]

7.

- (a) (i) two

1

- (ii) a molecule

1

- (iii) one pair of electrons between nitrogen and each of 3 hydrogens

1

rest correct

second mark dependent on first

1

- (b) (i) (g) (s) 1
- (ii) chloride 1
ignore formulae
- (c) (i) any **one** from: 1
- wear goggles
 - wear gloves
 - do not breathe in fumes
 - wipe up spills immediately
 - work in a fume cupboard
- (ii) (particles of) ammonia move faster than (particles of) hydrogen chloride 1
allow diffuses faster
allow hydrochloric acid
- (iii) particles / molecules have more energy 1
*do **not** accept atoms / ions*
- so they move faster 1
ignore references to rate of reaction
- [10]**

8.

- (a) diagram **A** 1
- (b) the atoms can slide over each other. 1
- the atoms are in layers 1
- (c) (i) sulfuric 1
- (ii) bubbles are produced 1
- the magnesium disappears 1
- (iii) crystallisation 1

[7]

9.

(a) gives out / releases / transfers to surroundings heat / energy

ignore light / burns

ignore the wire gets hot

1

(b) activation energy

1

(c) (aluminium +) oxygen (\rightarrow) aluminium oxide

accept correct formulae

1

(d) C

1

(e) (i) a negative

1

(ii) loses

1

(iii) gains

1

two

1

[8]

10.

the atoms are in layers

1

the atoms can slide over each other

1

[2]

11.

(a) carbon

1

(b) all

1

(c) covalent

1

(d) four

1

(e) hard

1

[5]

12.

(a) reduce wear of metal ie don't get damaged

or other sensible answer

or

stop / reduce friction

accept stop metal heating up

accept move more smoothly

ignore make it slippery / rub more smoothly

or

prevent seizing

accept can move freely

1

(b) (i) carbon

1

(ii) layers (of atoms)

1

can slide / slip over each other

allow slip off

or

weak forces of attraction / weak bonds (between layers)

allow no bonds

accept there are weak forces of attraction for

1 mark even when there is no reference to layers

accept atoms slide over each other (for 1 mark)

*an answer which **only** states there are weak bonds would gain 0*

mark when there is no reference to layers

weak covalent bonds = 0 marks

1

[4]