

GCSE Chemistry A (Gateway Science)

J248/01 Chemistry A C1-C3 and C7 (Foundation Tier)

Question Set 2

C2: Elements, Compounds and Mixtures

Multiple Choice Questions

1 Which technique is the best for separating pure water from a solution of sodium chloride in water?

- A Chromatography
- B Crystallisation
- C Distillation
- D Filtration

Your answer

[1]

2 Which statement shows that lead is a metal?

- A It is a dull grey colour.
- B It is in Group 4 of the periodic table.
- C It is in Period 6 of the periodic table.
- D It is malleable and can be easily shaped.

Your answer

[1]

3 What is the relative formula mass of sodium carbonate, Na_2CO_3 ?

- A 83.0
- B 90.0
- C 106.0
- D 130.0

$$\text{Na} = 23 \quad \text{C} = 12 \quad \text{O} = 16$$

$$23 \times 2 + 12 + 16 \times 3$$

$$= 106$$

Your answer

[1]

4 The size of a nanoparticle is similar to the size of a molecule.

What is the approximate size of a nanoparticle?

A 0.01 nm

1 ~ 100 nm

B 50 nm

C 1000 nm

D 10,000 nm

Your answer

B

[1]

5 A student separates the colours of black ink using paper chromatography.

- He puts a spot of black ink onto a piece of filter paper.
- He dips the filter paper into ethanol in a beaker.

What phase describes **ethanol** in this experiment?

A Gas phase

B Mobile phase

C Solid phase

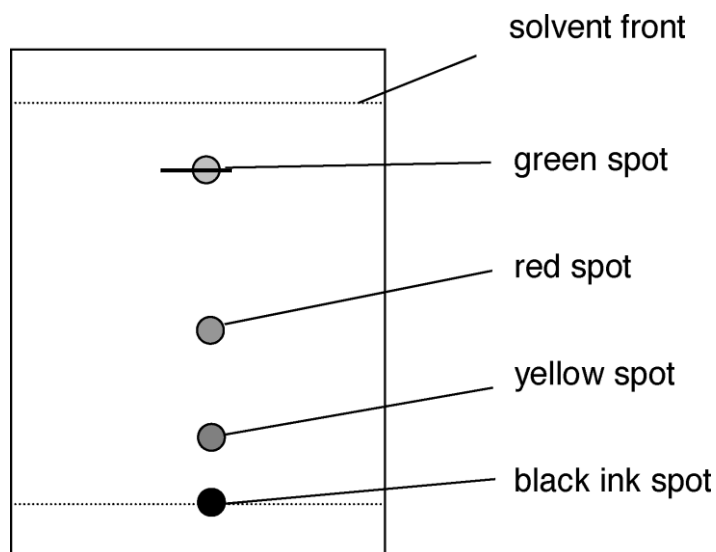
D Stationary phase

Your answer

B

[1]

6 Look at the chromatogram.



What is the R_f value of the **green** spot? Use a ruler to help you.

- A 0.17
- B 0.42
- C 0.83
- D 1.00

Your answer

C

$$\frac{4.4}{5.3} = \frac{\text{distance travelled by solute}}{\text{distance travelled by solvent}}$$

$$R_f = 0.83$$

[1]

7 Look at the table of fractions from the fractional distillation of crude oil.

Fraction	Boiling range (°C)
LPG	less than 25
petrol	85 – 105
diesel	150 – 290
fuel oil	290 – 380
bitumen	greater than 400

A hydrocarbon has a boiling point which is 3.5 times the boiling point of petrol.

Which fraction contains the hydrocarbon?

- A Bitumen
- B Diesel
- C Fuel oil
- D LPG

$$85 \times 3.5 = 297.5$$

Your answer C

[1]

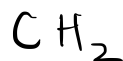
8 The **molecular** formula of decene is $C_{10}H_{20}$.

What is the **empirical** formula of decene?

- A CH_2
- B C_2H_4
- C C_5H_{10}
- D $C_{20}H_{40}$

$$10 : 20$$

$$1 : 2$$



Your answer A

[1]

9 A student tests the conductivity of an ionic compound.

Which row in the table shows the correct results?

	Solid ionic compound	Ionic compound dissolved in water	Molten ionic compound
A	Conducts	Conducts	Does not conduct
B	Conducts	Conducts	Conducts
C	Does not conduct	Does not conduct	Conducts
D	Does not conduct	Conducts	Conducts

Your answer

D

[1]

10 Which of these general properties correctly describes a metal?

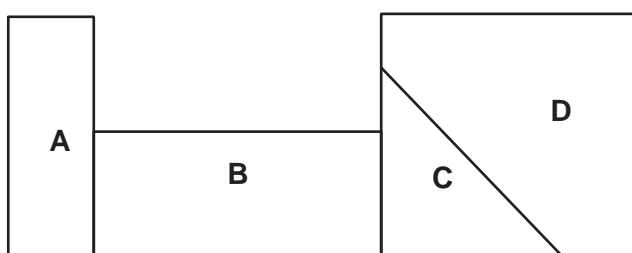
- A** Ductile and good conductor of heat
- B** High density and forms negative ions
- C** Malleable and low density
- D** Shiny and brittle

Your answer

A

[1]

11 This is a section of the Periodic Table.



In which section of the Periodic Table would you find **non-metals**?

Your answer

D

[1]

12 Which statement about **covalent** bonding is true?

- A Electrons are transferred from one atom to another.
- B Electrons are delocalised.
- C Electrons are shared between atoms.
- D Ions are formed.

Your answer

C

[1]

13 The electronic structure of an atom of an element is 2.8.8.2.

In which **period** of the Periodic Table is this element found?

- A 1
- B 2
- C 4
- D 8

Your answer

C

[1]

14 The electronic structure of an atom of an element is 2.8.8.2.

In which **group** of the Periodic Table is this element found?

- A 1
- B 2
- C 4
- D 8

Your answer

B

[1]

15 Which of these statements about nanoparticulate materials is correct?

- A Nanoparticles are much smaller than atoms.
- B Nanoparticulate materials can be used as catalysts.
- C Nanoparticulate materials have a very small surface area to volume ratio.
- D There are no risks when using nanoparticulate materials.

Your answer

B

[1]

16 Ethanol is a liquid at room temperature. It has a low melting point and boiling point.

Why?

- A Ethanol is an ionic compound.
- B The forces of attraction between ethanol molecules are strong.
- C The forces of attraction between ethanol molecules are weak.
- D There are no forces of attraction between ethanol molecules.

Your answer

C

[1]

17 The positions of some elements in the Periodic Table are shown by the letters **A** to **G**.

The letters shown are **not** the symbols of the elements.

Which elements are in Period 2?

- A **A** and **E**
- B **C** and **B**
- C **C** and **G**
- D **D** and **F**

Your answer

C

[1]

18 The formula of sulfuric acid is H_2SO_4 .

What is the **relative formula mass**, M_r , of sulfuric acid?

The relative atomic mass, A_r , of H is 1, of S is 32 and of O is 16.

- A 49
- B 98
- C 130
- D 200

$$1 \times 2 + 32 + 16 \times 4 = 98$$

Your answer

B

[1]

19 Which substance has **ionic** bonding?

- A Carbon dioxide
- B Carbon monoxide
- C Magnesium oxide
- D Oxygen

Your answer

C

[1]

20 The diameter of one type of carbon nanotube is 20 nm.

What is 20 nm in metres?

- A 2×10^{-3} m
- B 2×10^{-8} m
- C 2×10^{-20} m
- D 2×10^{-16} m

$$20 \times 10^{-9} = 2 \times 10^{-8}$$

Your answer

B

[1]

21 The molecular formula of hydrogen peroxide is H_2O_2 . What is the **empirical formula** of hydrogen peroxide?

- A H_2O_2
- B H_2O
- C HO
- D H_2O_4

2:2

1:1

HO

Your answer

C

[1]

Total Marks for Question Set 2: 21

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