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 B **[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 D

[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

Na = 23 C = 12 O = 16

23x2 + 12 + 16x3

= 106

Your answer C **[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

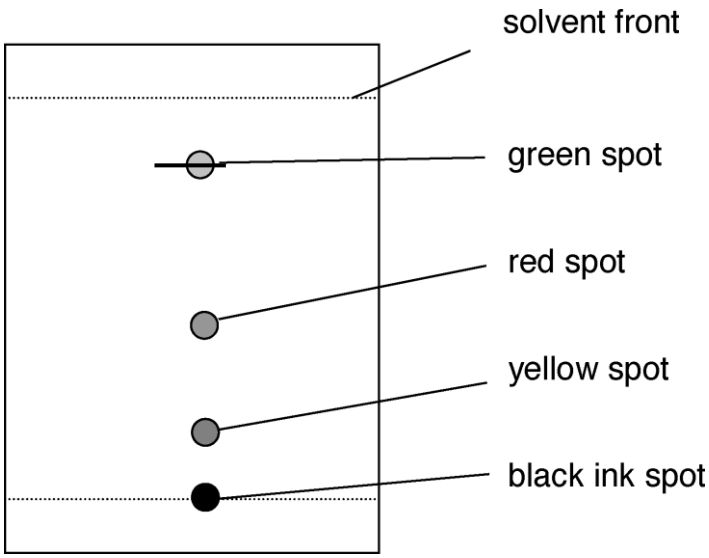
B Mobile phase

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

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

$R_f = 0.83$

Your answer C

[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 x 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

CH_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

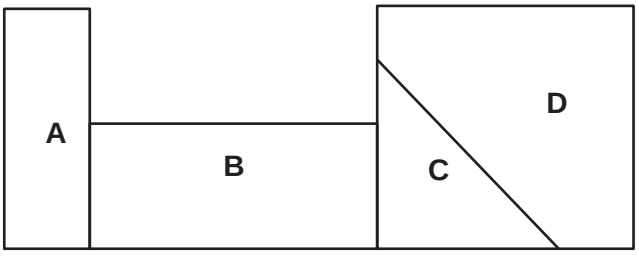
B High density and forms negative ions

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.

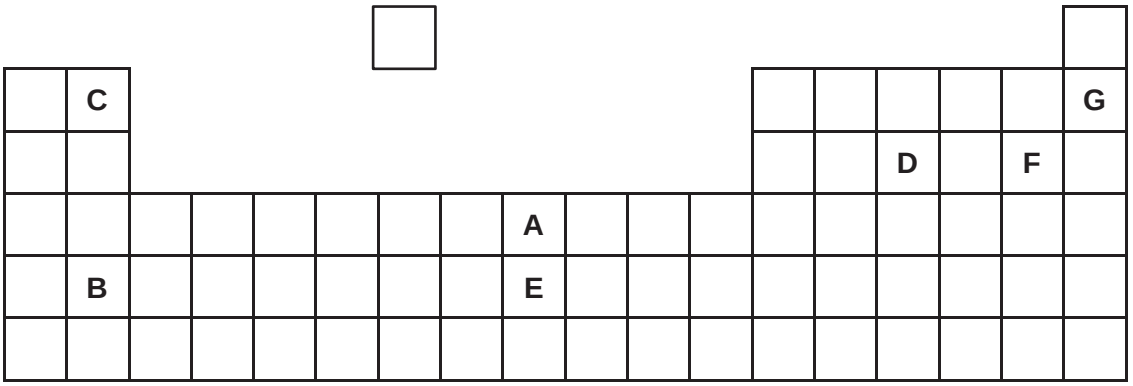
C The forces of attraction between ethanol molecules are weak.

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

1x2 + 32 + 16x4

= 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