Atoms

Question Paper

Level	GCSE
Subject	Chemistry
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2C)
Topic	Principles of Chemistry
Sub-Topic	Atoms
Booklet	Question Paper

Time Allowed: **36 minutes**

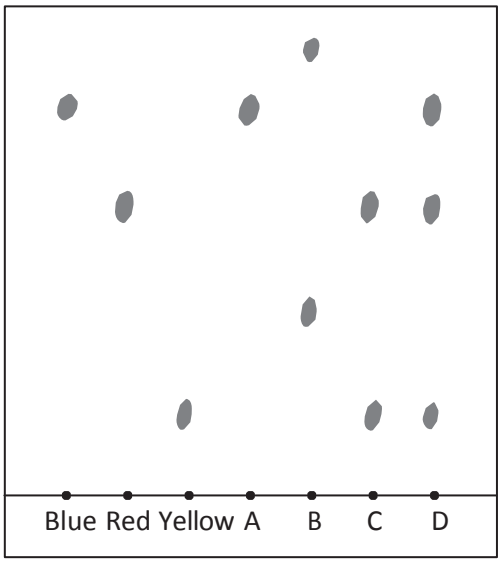
Score: **/30**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1 A student produces this chromatogram for four dyes, **A**, **B**, **C** and **D**.



(a) Put a cross (☒) in a box to indicate your answer.

(i) Which one of the dyes contains three colours?

(1)

☒ **A**

☒ **B**

☒ **C**

☒ **D**

(ii) Which one of the dyes contains one colour only?

(1)

☒ **A**

☒ **B**

☒ **C**

☒ **D**

(b) Each dye is made from one or more of the colours blue, red and yellow.

The student thinks that the result for one dye is incorrect.

Suggest which result is incorrect. Explain your answer.

(2)

The incorrect result is .....

because .....

.....

(Total for Question 1 = 4 marks)

2 The box shows some methods that can be used in separating mixtures.

crystallisation	dissolving	evaporation	filtration
paper chromatography	simple distillation	fractional distillation	

From the box, select the best method for each of the separations.

You may use each method once, more than once or not at all.

(a) Removing sand from a mixture of sand and water.

(1)

.....

(b) Obtaining pure water from a salt solution.

(1)

.....

(c) Extracting the red dye from a sample of rose petals.

(1)

.....

(d) Separating the coloured dyes in a sample of green ink.

(1)

.....

(e) Obtaining ethanol (alcohol) from a mixture of ethanol and water.

(1)

.....

(Total for Question 2 = 5 marks)

3 This information was taken from a label on a packet containing a pizza.

Nutritional information (per ½ pizza)	
Energy	1260 kJ
Protein	14.0 g
Carbohydrate	370 g
sugars	62 g
Fat	106 g
saturated	50 g
unsaturated	56 g

(a) (i) Which type of fat contains a double carbon to carbon (C ═ C)bond?

(1)

.....

(ii) The colour of bromine water is orange.

State the final colour of the mixture after bromine water is shaken with

(2)

an unsaturated fat .....

a saturated fat .....

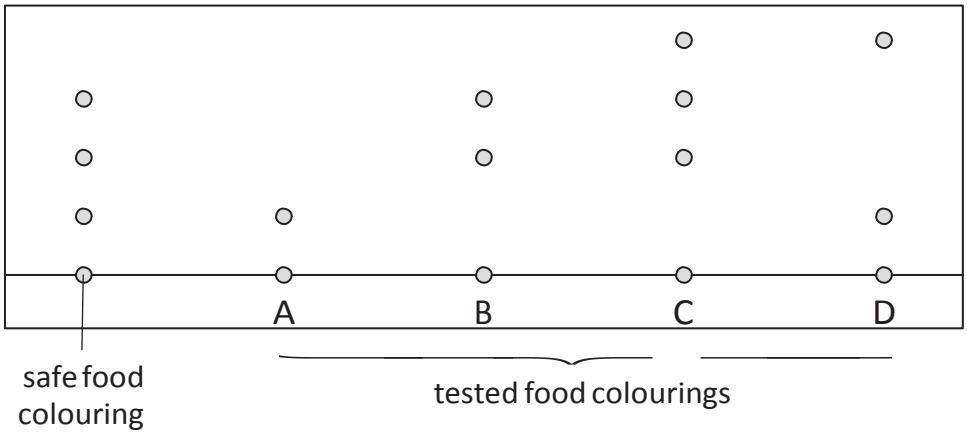
(iii) What type of reaction takes place when bromine reacts with a compound containing a C═C bond?

(1)

.....

(b) In February 2005, some companies had to remove their pizzas from sale because the food colourings in them were found to contain the artificial dye called Sudan 1, which is known to cause cancer.

The chromatogram shows how the dyes in the colourings were detected and identified.



(i) Which one of the food colourings, A, B, C or D, is made up of only one dye?

(1)

.....

(ii) Identify the food colourings that may have contained Sudan 1.

(1)

.....

(iii) Explain how the chromatogram shows that the five food colourings are different from each other.

(1)

.....

.....

.....

.....

.....

(Total for Question 3 = 7 marks)

4 (a) The list shows some techniques used to separate mixtures.

A crystallisation

B filtration

C fractional distillation

D paper chromatography

E simple distillation

Complete the table to show the best method of obtaining each substance from the mixture.

In each case, choose one of the letters A, B, C, D or E. Each letter may be used once, more than once or not at all.

(4)

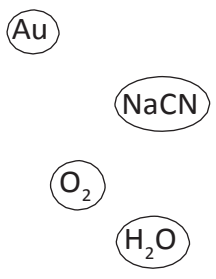
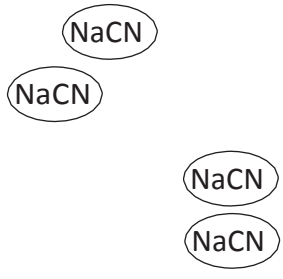
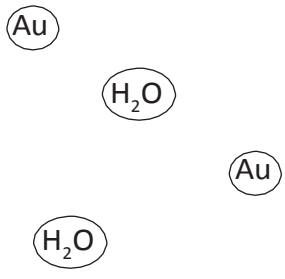
Substance	Mixture	Letter
sand	sand and water	
solid copper(II) sulfate	aqueous copper(II) sulfate	
red food dye	mixture of food dyes	
kerosene	crude oil	

(b) Gold occurs in ores, which are mixtures of gold and other substances. Several elements and compounds are used in the extraction of gold from its ores.

Each box below represents the substances present in one part of the extraction process.

Classify the contents of each box as a compound, an element or a mixture by writing your choice below each box.

(3)

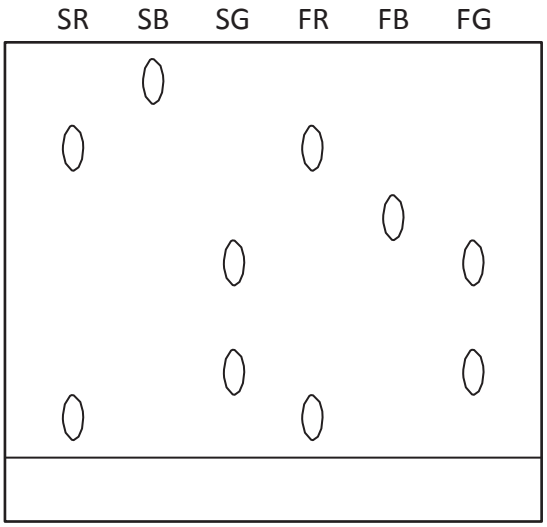
			
Compound, element or mixture			

(Total for Question 4 = 7 marks)

5 A student investigates some food colourings, each of which is made up of one or more dyes.

She produces a chromatogram using the safe colourings red (SR), blue (SB) and green (SG) and food colourings red (FR), blue (FB) and green (FG).

The diagram shows her chromatogram.



(a) How many dyes are there in SR?

(1)

☒ **A** 1 ☒ **B** 2 ☒ **C** 3 ☒ **D** 4

(b) Complete the table by placing ticks (✓) next to the two food colourings that are definitely safe to use.

Explain your answer.

(2)

Food colouring	Safe to use?
FR	
FB	
FG	

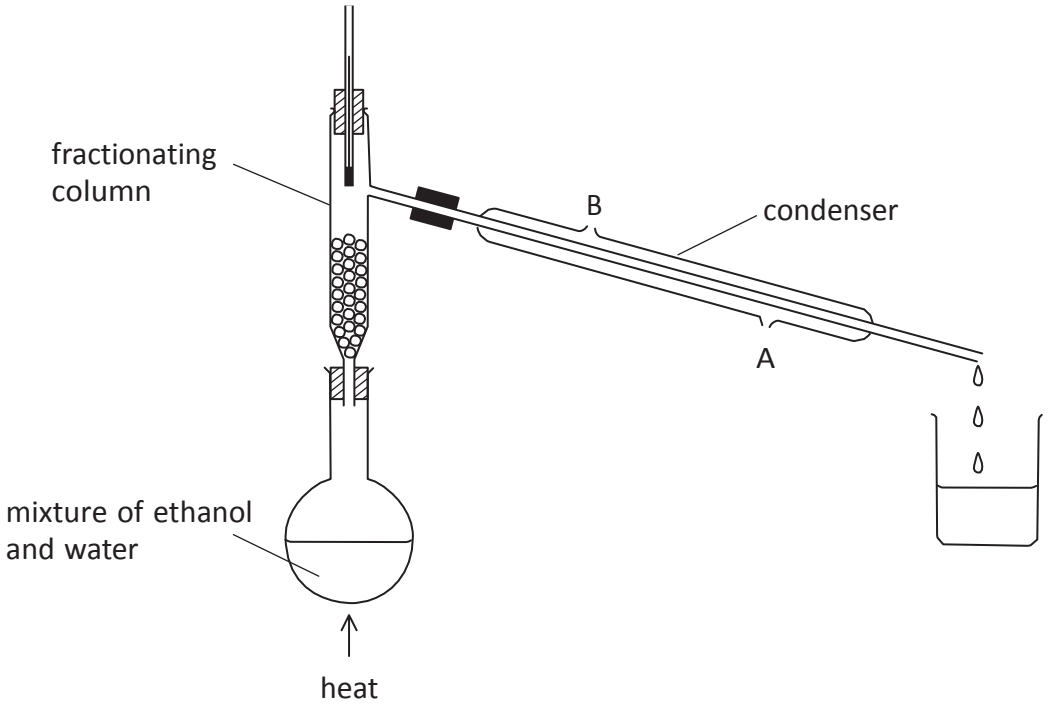
explanation .....

.....

.....

(Total for Question 5 = 3 marks)

6 This apparatus is used to separate a mixture of ethanol (boiling point 78 °C) and water (boiling point 100 °C).



(a) What is the name of this method of separation?

(1)

.....

(b) Why can ethanol and water be separated by this method?

(1)

.....

.....

(c) Suggest why water should enter the condenser at A rather than B.

(1)

.....

.....

(d) Explain why the first liquid to be collected in the beaker is mostly ethanol.

(1)

.....

.....

(Total for Question 6 = 4 marks)