

Name:

Date:

C8 - Test 2
CHEMICAL ANALYSIS
Beginner

GCSE

CHEMISTRY

AQA - Combined Science

Mark

Grade

Materials

For this paper you must have:

- Ruler
- Pencil and Rubber
- Scientific calculator, which you are expected to use when appropriate

Instructions

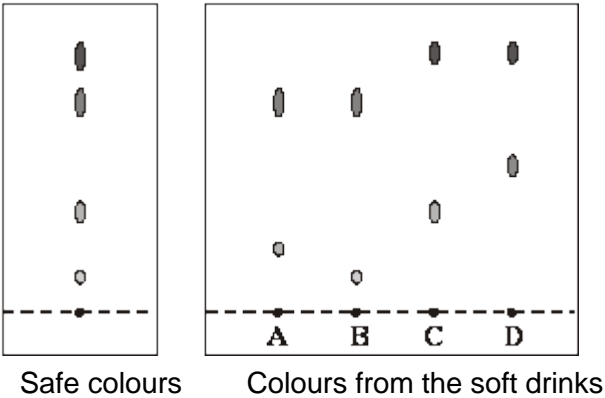
- Answer all questions
- Answer questions in the space provided
- All working must be shown

Information

- The marks for the questions are shown in brackets

1.

Chromatography was carried out on a sample of soft drinks to check that they contained only colours that were safe. This is the result.

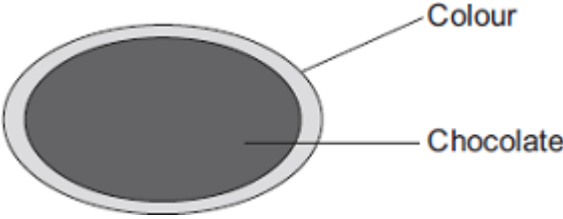


What conclusions about the safety of the colours in the soft drinks **A**, **B**, **C** and **D** can be made from the results shown by chromatography?

(Total 2 marks)

2.

Colours are used to coat some chocolate sweets.
Some of these colours are given E-numbers.



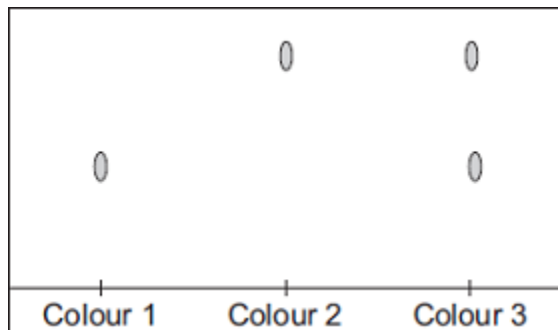
(a) Use the correct word from the box to complete the sentence.

- | | | |
|-----------------|----------------|-------------|
| additive | element | fuel |
|-----------------|----------------|-------------|

An E-number is used to identify a permitted food _____

(1)

- (b) Chromatography was used to compare three of the colours used to coat the chocolate sweets.



What do these results tell you about these three colours?

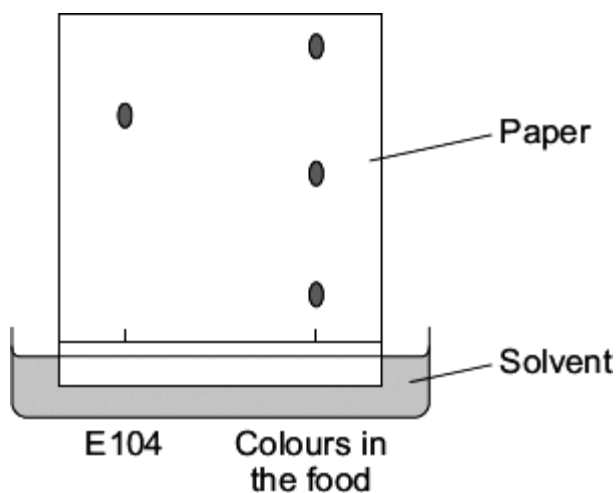
(3)
(Total 4 marks)

3. An article began:

Ban yellow additives

Quinoline yellow (E104) is suspected of causing hyperactivity, asthma and rashes in children.

- (a) A student tested a food to find out if it contained quinoline yellow (E104). The student's results are shown below.



- (i) Draw a ring around the correct answer to complete the sentence.

This method of detecting and identifying colours is called

chromatography.

distillation.

electrolysis.

(1)

- (ii) Using the student's results, how many different colours are in the food? ____

(1)

- (iii) Using the student's results, how can you tell that the food does **not** contain quinoline yellow (E104)?

(1)

(b) Quinoline yellow (E104) is used in foods such as sweets, drinks and ice cream.

(i) Give **one** reason why quinoline yellow (E104) is added to foods.

(1)

(ii) Suggest what should be done to decide if quinoline yellow (E104) should be banned.

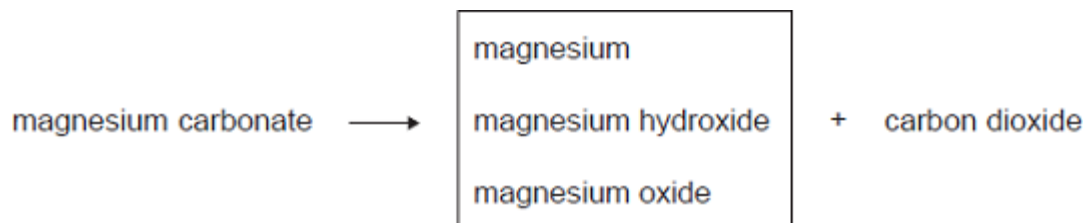
(1)

(Total 5 marks)

4.

Carbon dioxide is produced when metal carbonates are heated.

(a) (i) Draw a ring around the correct answer to complete the word equation.



(1)

(ii) Draw a ring around the correct answer to complete the sentence.

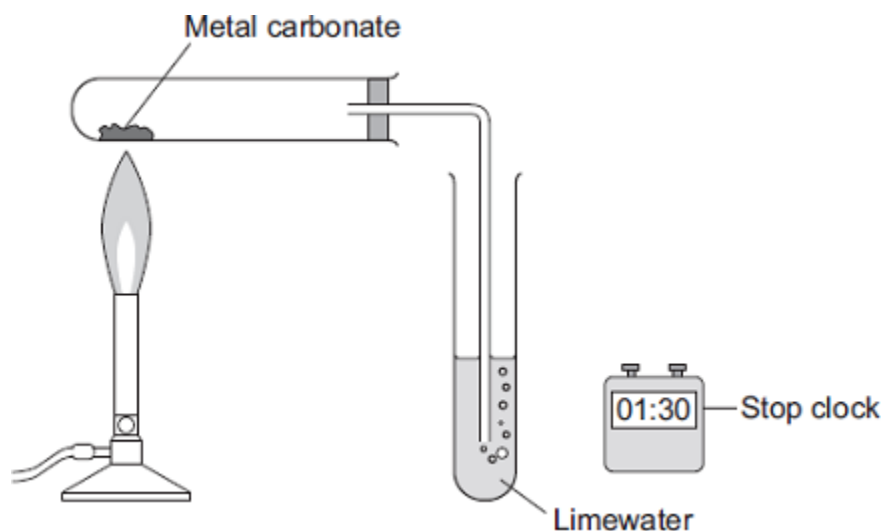
The reaction to produce carbon dioxide from magnesium

carbonate is

combustion.
decomposition.
fermentation.

(1)

(b) A student investigated what happens when metal carbonates are heated.



The student:

- used the apparatus to investigate heating four metal carbonates
- started the stop clock at the same time as he began to heat the metal carbonate
- stopped the stop clock when carbon dioxide was produced.

The student's results are shown in the table.

Metal carbonate	Time taken for the production of carbon dioxide to start in seconds
Calcium carbonate	163
Copper carbonate	24
Magnesium carbonate	92
Zinc carbonate	67

(i) Tick (✓) the type of graph the student should draw from these results.

Type of graph	Tick (✓)
Bar chart	
Line graph	
Scatter graph	

(1)

(ii) Use the Chemistry Data Sheet to help you to answer this question.

Draw a ring around the correct answer to complete the sentence.

The more reactive the metal in the carbonate the

less
more
same

time is

taken for the production of carbon dioxide to start.

(1)

(iii) How did the student know that carbon dioxide was produced?

Use the diagram of the apparatus to help you to answer this question.

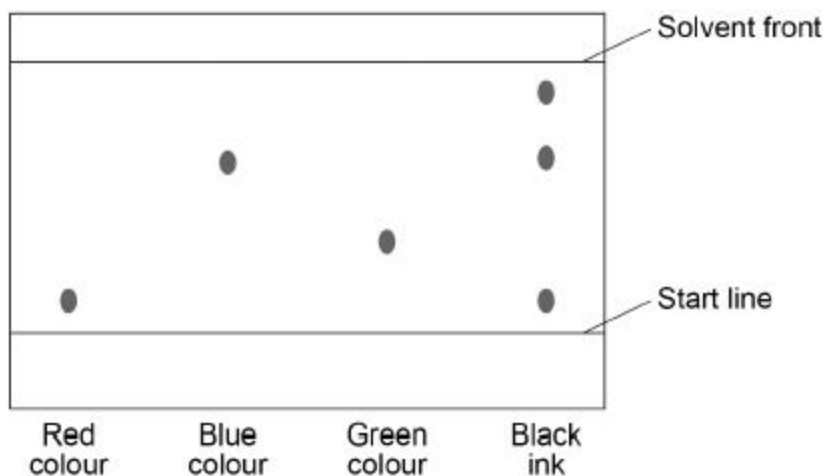
(2)

(Total 6 marks)

5.

A student used paper chromatography to identify the colours in a black ink.

The diagram below shows the student's results.



(a) What colours are in the black ink?

(2)

(b) Suggest which colour is least soluble in the solvent.

Give a reason for your answer.

Colour _____

Reason _____

(2)

(c) Use the diagram above to complete the table below.

	Distance in mm
Distance moved by green colour	
Distance moved by solvent	

Calculate the R_f value for the green colour.

Use the equation:

$$R_f = \frac{\text{distance moved by green colour}}{\text{distance moved by solvent}}$$

R_f value = _____

(4)

(Total 8 marks)

6.

Race horses may be given drugs to improve their performance in races.

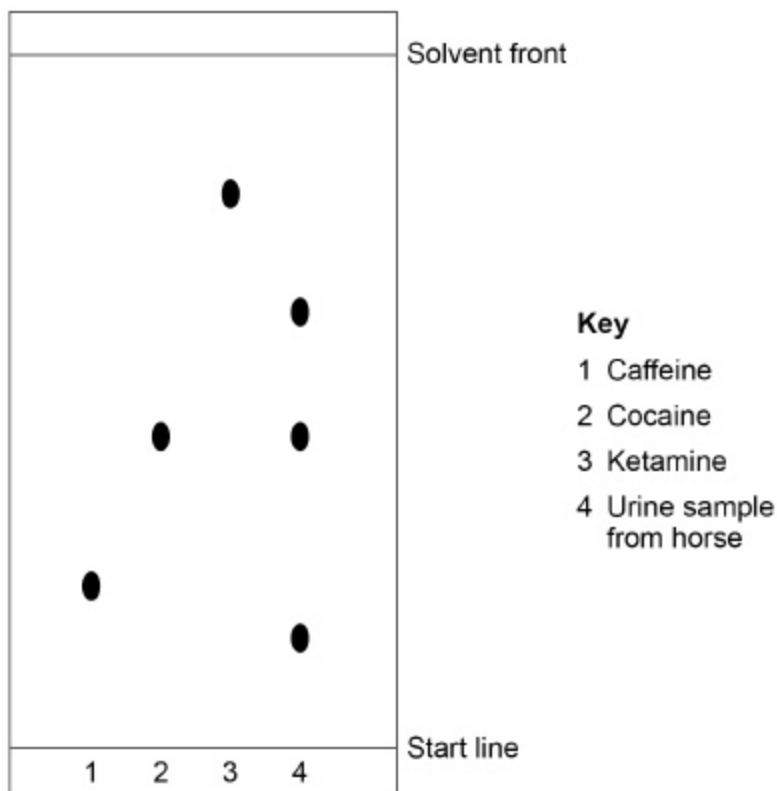
This is illegal in the UK.

After races, urine samples are collected from the horses.

These samples are tested for drugs.

Chromatography is one of the tests used to identify drugs in urine.

The diagram shows a chromatogram.



(a) How do we know that sample 1 was a **pure** sample of caffeine?

(1)

(b) Calculate the R_f value for cocaine.

Give your answer to 2 significant figures.

Use information from the diagram.

Use the equation:

$$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$$

R_f value of cocaine = _____

(4)

(c) Give **three** conclusions about the urine sample from the horse.

Use information from the diagram.

1. _____

2. _____

3. _____

(3)

(Total 8 marks)