New Document 1

Name: _____

Class: _____

Date: _____

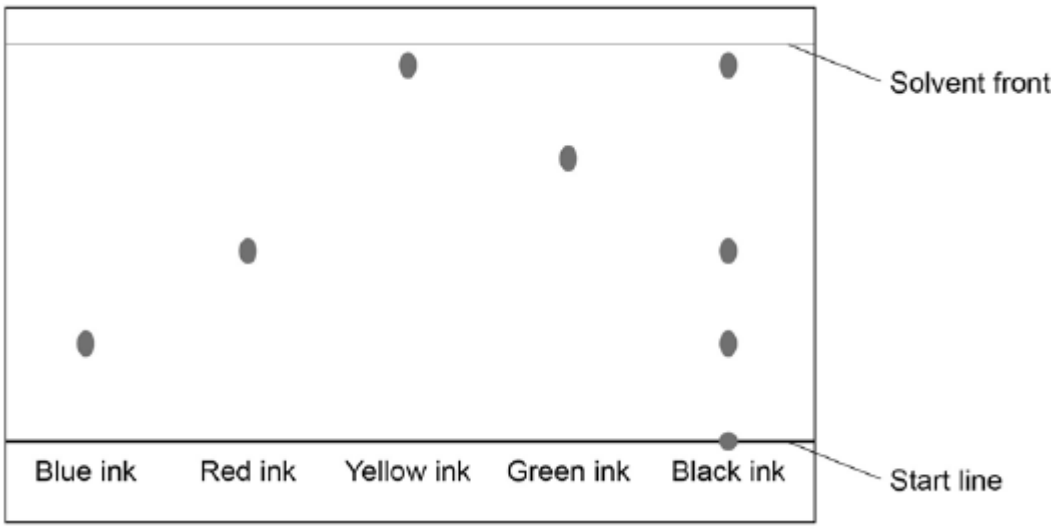
Time: **16 minutes**

Marks: **15 marks**

Comments:

Q1.

The figure below shows a paper chromatogram of five different inks.



(a) Explain how paper chromatography separates substances.

(3)

(b) Analyse the chromatogram. Describe and explain the result for black ink.

(4)

(c) Use the figure above to calculate the R_f value of the blue ink.

_____

_____

_____

_____

R_f value = _____

(3)

(Total 10 marks)

Q2.

Fire dancers use firesticks to make flame patterns.

One end of the firestick is soaked in kerosene.
The kerosene is lit and burns with a yellow flame.

(a) Kerosene is a mixture of hydrocarbons.

Which elements are present in a hydrocarbon?

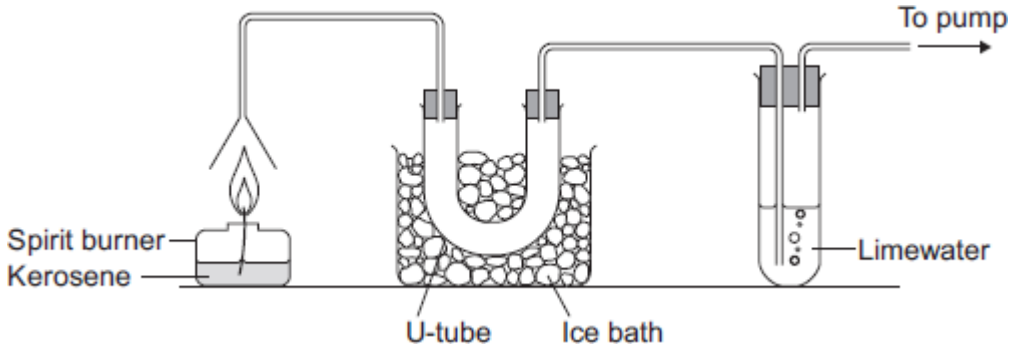
_____

_____

(1)

(b) A student investigated the products formed when kerosene burned.

The diagram shows the apparatus the student used.



Describe and explain the observations you would expect the student to make.

(4)

(Total 5 marks)

Mark schemes

Q1.

(a) mobile phase / solvent moves through paper

1

and carries substances different distances

1

which depend on their attraction for paper and solvent

allow which depend on solubility in solvent and attraction to paper

1

(b) **Level 2 (3–4 marks):**
A relevant and coherent description which provides a clear analysis of the chromatogram. The response makes logical links between the points raised and uses sufficient examples
to support these links.

Level 1 (1–2 marks):
Simple statements are made which demonstrate a basic attempt to analyse the chromatogram. The response may fail to make logical links between the points raised.

0 marks:
No relevant content

Indicative content

- black ink is a mixture
- because more than one spot
- contains blue, red and yellow
- because Rf values / positions match
- does not contain green
- contains an unknown
- which is insoluble
- yellow is most soluble or has highest Rf value, blue is least

4

(c) both measurements from artwork for **1** mark (1.3 ± 0.1 cm and 5.3 ± 0.1 cm)

1

correct equation used for **1** mark

1

0.25 ± 0.02

1

*accept 0.25 ± 0.02 without working shown for **3** marks*
*allow ecf from incorrect measurement to final answer for **2** marks*

[10]

Q2.

(a) hydrogen **and** carbon

both elements in either order needed for mark
any additional elements negates the mark

1

(b) colourless liquid / condensation in U tube
ignore ice melts

1

(because) water produced

1

lime water goes cloudy

1

(because) carbon dioxide produced

1

[5]