

MARK SCHEME

GCSE

CHEMISTRY

AQA - COMBINED SCIENCE

C8 - TEST 6

CHEMICAL ANALYSIS

Advanced

Mark schemes

1.

(a) any **two** from:

ignore reference to taste / shelf-life / sales etc

- improve the colour / appearance
- additives are permitted / not banned / listed on the label
- link between additives and hyperactivity not proved
- maintain the low cost of the drink **or** natural colours would make the drink cost more

allow cheaper if qualified

2

(b) have a control group / placebo **or** test children before any drink given

1

give a drink to at least 3 groups **or** give a drink at least 3 times

1

give each additive to different group / children / at different times

1

observe / monitor / compare behaviour of group / children

1

(c) (i) so that there would be trust / respect / no bias

1

(ii) compare the colours / spots from the orange drink with those of the (three) additives

accept diagram of chromatogram(s) with spots for E102, 104, 110 and sample from the orange drink

1

there should be no matching colours / spots

1

[9]

2.

(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]