MARK SCHEME

GCSE

CHEMISTRY

AQA - TRIPLE SCIENCE

C8 - TEST 2

CHEMICAL ANALYSIS

Beginner

Mark schemes

1. (i) correct named instrumental method

eg

atomic absorption spectroscopy / spectrometry

accept atomic / absorption spectroscopy

accept aas

or

mass spectrometry / spectroscopy

accept mass spec

or

infrared (spectrometry) / IR

or

ultraviolet / spectroscopy / UV

or

nuclear magnetic spectroscopy / nmr

or

gas-liquid chromatography / GLC

1

(ii) any **one** from:

- fast / quick **or** comment about speed

  ignore lost

  ignore human error

- small amount

  accept operators do not need <u>chemical</u> skills

- sensitive / accurate / precise

  ignore safe / easier to use

- ease of automation
- reliable / efficient
- can be left to run / continuous analysis

1

[2]

2. (a) additive

1

(b) colour 3 is a mixture of colours 1 and 2

any **two** from:

accept E-number or additive instead of colour

ignore comments about height / level

1

- colour 1 is made up of only one colour / dye
- colour 2 is made up of only one colour / dye
- colour 3 is made up of two colours / dyes
  or
  more colours (than colours 1 and 2)

2

[4]

3. (a) (i) milky

1

carbonate ions

1

(ii) red

1

(b) (i) smaller

1

(ii) The answer obtained is closer to the true value

1

[5]

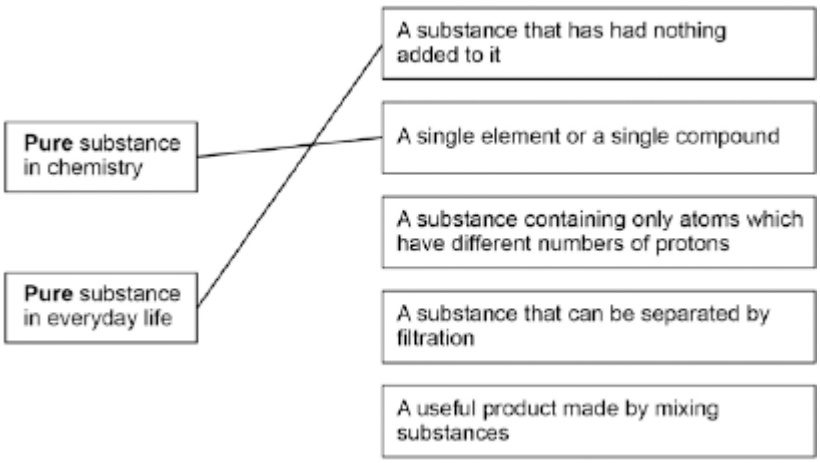
4. (a) Air

2

Steel

1

(b)



Allow **1** mark for the correct meanings linked to context but incorrect way around

1

(c) Damp litmus paper turns white

1

(d) Iron(III)

1

[6]

5. (a) copper (II) → blue

iron (III) → brown

more than one line from any box negates the mark

1
1

(b) aluminium

allow correct answer shown in box if answer line blank

1

(c) (i) yellow

allow orange

1

(ii) lilac

allow purple

1

(iii) one colour masks the other

allow colours mixed

1

[6]

6. (a) (i) yellow

1

(ii) lilac

1

(b) (bubble through) limewater

1

cloudy

allow white / milky

1

(c) (i) silver nitrate solution

1

(ii) white

1

[6]

7. (a) (i) *method of introducing sample into flame*

e.g. wire / splint / spray

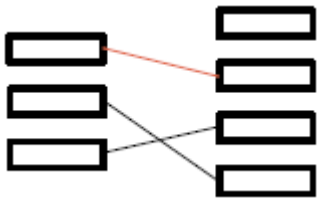
1

clean wire or colourless flame

allow blue / roaring flame

1

(ii)



1

1

(iii) (potassium) chloride

allow KCl ***or*** *Cl^-*

1

(b) (i) copper

allow Cu^{2+}

1

(ii) sulfate

1

[7]

8. (a) to improve the appearance of the drink

1

because they are permitted colours

1

(b) (i) chromatography

1

(ii) three / 3

1

(iii) because one colour / spot / E102 matched

1

because the other / two colours / spots / E104 and E110 did not match

if no other mark awarded allow because the drink did not contain E104 and E110 ***or*** *because the drink contained E102 for* ***1*** *mark*

accept only E102 matched for ***2*** *marks*

1

[6]

9. (a) stop them reacting

owtte

1

(b) (i) fizzing / bubbles / effervescence

owtte

1

(ii) (g)

1

(iii) limewater

1

(c) yellow

1

(d) (i) barium chloride

1

(ii) white

1

(iii) eg don't see what is being bought

ignore references to cost

or

a comment about quality / purity
eg may be impure / contaminated

1

[8]

10. (a) The start line was drawn in ink

1

The water level was above the spots

1

(b) 3

1

(c) **A**

1

(d) *(distance moved by dye A)* 38 (mm)

allow values in range 36-40

1

(distance from start line to solvent front)
102 (mm)

allow values in range 101-103

1

$$\frac{38}{102}$$

allow ecf from Table 1

1

0.37254 …

allow values in range 0.35 − 0.39

1

0.37

1

*accept 0.37 with no working shown for **5** marks*

[9]