



**GCSE Chemistry**  
**Purity, Formulations and**  
**Chromatography**  
**Mark Scheme**

**Time available: 40 minutes**  
**Marks available: 36 marks**

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## Mark schemes

- 1.** (a) crush the flower 1  
use more flowers 1
- (b) the start line is drawn in ink 1  
uses water as the solvent 1
- (c) flower A contains a single pure colour 1  
the colour in flower C is a mixture 1
- (d)  $\frac{7.2}{9.0}$  1  
= 0.8 1  
*an answer of 0.8 scores 2 marks*  
*ignore units*
- [8]**
- 2.** (a) start line drawn in ink 1  
*allow start line should have been drawn in pencil*
- (so) ink dissolves  
*(as) pencil does not dissolve*
- or**  
ink runs in solvent / water  
**or**  
*pencil does not run in solvent / water* 1
- water used (as solvent)  
*allow ethanol not used*
- or**  
water in beaker 1
- (so) colours will not dissolve / move 1

- (b) any **two** from:
- the flowers have no colours in common  
*allow the flowers are not the same colour*
  - A / B contain one colour
  - C contains two colours  
*allow C is a mixture of colours*
  - (the colour in) B is most soluble  
*allow (the colour in) B has the highest  $R_f$  value*  
*allow one of the colours in C is the least soluble*

2

(c) (distance moved =)  $\frac{3.2}{0.65}$

1

(distance moved) = 4.9 (cm)

*allow 4.923076923 (cm) correctly rounded*

1

*an answer of 4.9 (cm) scores 2 marks*

**[8]**

**3.**

- (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

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

4.

(a) (improve) appearance

*allow add colour*

*allow these food colourings have not been proven to cause hyperactive behaviour in young children*

*do **not** accept taste / flavour / preservatives*

*ignore reference to E-numbers*

1

(b) X

1

(c) any **three** from:

- S contains six / 6 colourings

- P contains five / 5 colourings

*if neither of first 2 bullet points given allow **1** mark for S contains more colours than P **or** converse*

- both S and P contain the same

five / 5 colourings

- both contain W **and** Y

- both sweets (may) cause hyperactivity

*ignore unsafe*

- neither contain X **and** Z

3

[5]

5.

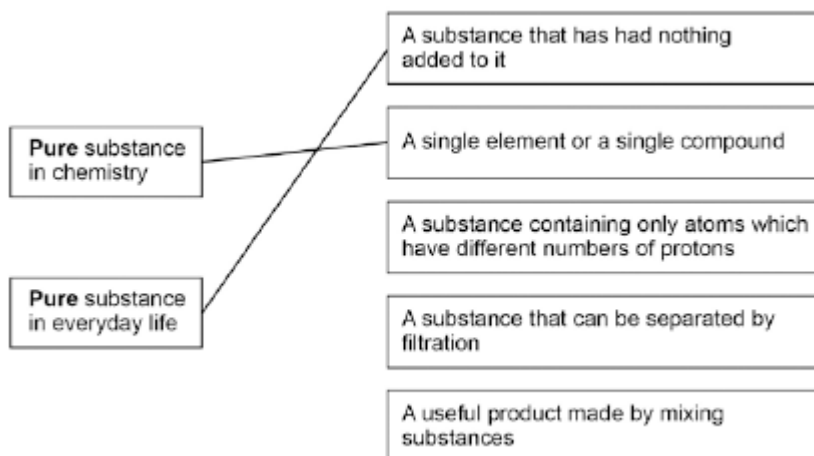
(a) Air

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]**