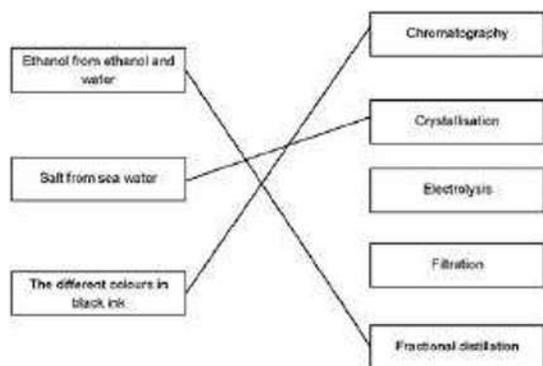


## Mark schemes



1.

(a)



1  
1  
1

(b) include a (filter) funnel

*allow funnel drawn on the diagram  
ignore clamp stand*

1

(c) evaporate

1

condense

1

*must be this order*

(d)  $\frac{2}{20} \times 100$

1

= 10 (%)

1

*an answer of 10 (%) scores 2 marks*

*an answer of 11.1(%) or 90 (%) scores 1 mark*

(e) an alloy

1

(f) the layers in the mixture are distorted

1

(g) 8000 nm<sup>3</sup>

1

[11]

2.

(a) any **one** from:

- heat
- stir

1



- (b) filter  
*accept use a centrifuge*  
*accept leave longer (to settle)*

1

- (c) any **one** from:
- wear safety spectacles
  - wear an apron

1

- (d) evaporation at **A**

1

condensation at **B**

1

- (e) 100

1

[6]

3.

- (a) start line drawn in ink

1

so it will run / dissolve in the solvent / split up  
*allow mixes with the spots*

1

spots under solvent **or** solvent above spots / start line

1

so they will mix with solvent **or** wash off paper **or** colour the solvent **or** dissolve in the solvent

1

- (b) (i) contains **A** and **E**

1

and one other (unknown substance)

*if no other marks awarded, an answer saying it is made up of three colours gains 1 mark*

1

- (ii) 45 or 46

*allow any value from 45 to 46*

1

18

*allow any value from 16 to 20*

*award 1 mark if numbers correct but in cm*

1



(iii) 0.40

*allow ecf from (b)(ii)*

*ignore units*

1

(c) fast red

*allow ecf from (b)(iii)*

1

has same  $R_f$  value

*allow none of them, as none has the same  $R_f$  value for 2 marks*

1

(d) any **one** from:

- more accurate
- more sensitive
- uses small quantities of samples
- quicker / faster / more rapid
- can link to mass spectrometer (MS)

1

[12]

4.

(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]

5.

(a) (i) chromatography

1

(ii) 3 / three

1

(iii) the colour / E104 is not on the same level as any of the colours in the food

*accept E104 does not match*

1

(b) (i) to improve the appearance of the food

*ignore adds yellow / colour*

*ignore taste / flavour*



1

(ii) further / or different tests (for harmful effects) **or** obtain more evidence (that it is harmful)

*allow do a survey / study*

1

**[5]**