

SEPARATION TECHNIQUES 2

MARK SCHEME

Q1.

Question	Answer	Extra information	Marks
(a)	vaporise / evaporate different condensing points / temperatures	allow boil for vaporise accept condense at different levels ignore different size molecules or different densities mention of cracking = max 1 allow boils at different temperatures and condenses for 2 marks if no other marks awarded allow fractional distillation for 1 mark	1 1
(b)(i)	any one from: • range of boiling points • range of carbon atoms		1
(ii)	greater the number (of carbon atoms) the higher the boiling point	do not accept molecules / particles	1
Total marks			4

Q2.

Question	Answer	Extra information	Marks
(i)	chromatography		1
(ii)	K		1
(iii)	K and L		1
(iv)	spots / dyes / colours are in different places or have travelled at different rates colours made up of different combinations / mixtures of dyes / spots	i.e. the place / position of the dots i.e. the number / combination of spots	1 1
Total marks			5

Q3.

Question	Answer	Extra information	Marks
	use of solvent / solution / water / any named solvent		1
	separates / carries colour(s) / dye(s)	allow any idea of movement e.g. runs / moves	1
	match against Rf value / known chromatogram / similar pattern or comparison to permitted additive / colour		1
		removal of coloured additive from salmon does not gain any marks ignore reasons for separation maximum 2 if technique clearly doesn't work	
Total marks			3

Q4.

Question	Answer	Extra information	Marks
	the Sudan 1 should have been included		1
	to compare against the colourings (in the red chilli powder)		1
Total marks			2

Q5.

Question	Answer	Extra information	Marks
(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:		3

	<ul style="list-style-type: none"> • S contains six / 6 colourings • P contains five / 5 colourings • both S and P contain the same five / 5 colourings • both contain W and Y • both sweets (may) cause hyperactivity • neither contain X and Z 	<p>if neither of first 2 bullet points given allow 1 mark for S contains more colours than P or converse</p> <p>ignore unsafe</p>	
Total marks			5

Q6.

Question	Answer	Extra information	Marks
	by (fractional) distillation or fractionation	accept a description of the distillation process (heat and how separation works) e.g. heat and condense accept boil / vapourise etc for heat	1
Total marks			1

Q7.

Question	Answer	Extra information	Marks
A	1		
B	3		
C	2		
D	4		
Total marks			4

Q8.

Question	Answer	Extra information	Marks
A	2		
B	1		
C	4		
D	3		
Total marks			4