

Plant oils and their uses

Mark scheme

1.	(a)	soft from vegetable oils only <i>accept Z</i>	1	
		contains the high(est) amount of polyunsaturated fat or the low(est) amount of saturated fat <i>ignore any values / percentages</i>	1	
	(b)	(i) unsaturated	1	
		(ii) hydrogen	1	
		higher	1	[5]
2.	(a)	(i) crushed <i>if line blank allow crushed circled in the box</i>	1	
		(ii) any one from:		
		• 'costs' less / cheaper		
		• easier / faster		
		• less complicated equipment		
		• does not need heating / energy		
		• distilling could decompose the oil	1	
	(b)	(i) any one from:		
		• do not mix / dissolve		
		• (stay) separate		
		• form layers		
		• are immiscible	1	
		(ii) mix <i>words must be in correct places</i>	1	
		emulsion	1	[5]
3.	(a)	(i) soya <i>allow bean</i>	1	
		high(est) in polyunsaturated fat and low(est) in saturated fat <i>independent mark</i>	1	
		(ii) same / balanced amount of each fat <i>accept it contains the lowest total amount of these fats or it is low in saturated fat</i> <i>allow only 14% for this mark</i>	1	
	(b)	(i) turns colourless <i>accept colour disappears</i> <i>ignore fading</i>	1	
		(ii) any two from:		

	<ul style="list-style-type: none"> unsaturated fat content / healthiness about the same / similar to maize <i>accept about the same number of double carbon bonds as maize</i> <i>accept 'a bit less' for similar</i> less unsaturated / less healthy than soya <i>accept fewer / less double bonds than soya</i> <i>ignore 'more saturated'</i> more unsaturated / more healthy than olive / palm <i>accept more double bonds than olive / palm</i> <i>ignore 'less saturated'</i> <i>if no other mark awarded accept sunflower oil has (about) the same result as maize oil for 1 mark</i> <i>ignore comments about saturated fats</i> 	2	
			[6]
4.	(a) yes (there is the general trend) 'as the iodine value increases the melting point decreases' or 'as the hardness decreases the mp decreases' <i>accept converse statement</i> <i>do not accept boiling point</i>		
	or no melting points are in random order / go up and down	1	
	one specific use of comparative data from the table either showing the trend or an anomaly <i>can be gained from yes or no answer</i> <i>ignore bp</i>	1	
	(b) the iodine turns colourless	1	
	this would be difficult to see (if the oil was dark coloured) <i>allow similar colour as iodine or iodine is brown</i>	1	
	(c) (consumer may think that) the company (scientists) would be biased	1	
	consumer more likely to trust independent scientists <i>allow independent scientists not biased</i>	1	
	(d) add (measured amount of) hydrogen <i>accept hydrogenation</i>	1	
	any two from:	2	
	<ul style="list-style-type: none"> (nickel) catalyst hot / 60°C temperature hardened 		
	<i>accept add a hard / hydrogenated fat / oil or make an emulsion</i>		[9]