

Plant oils and their uses

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

*accept about the same number of double carbon bonds as maize  
accept 'a bit less' for similar*

- less unsaturated / less healthy than soya  
*accept fewer / less double bonds than soya  
ignore 'more saturated'*
- more unsaturated / more healthy than olive / palm 2  
*accept more double bonds than olive / palm  
ignore 'less saturated'  
if no other mark awarded accept sunflower oil has (about) the  
same result as maize oil for 1 mark  
ignore comments about saturated fats*

[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'  
*accept converse statement  
do **not** accept boiling point*
- 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 1  
*can be gained from yes or no answer  
ignore bp*
- (b) the iodine turns colourless 1  
this would be difficult to see (if the oil was dark coloured) 1  
*allow similar colour as iodine **or** iodine is brown*
- (c) (consumer may think that) the company (scientists) would be biased 1  
consumer more likely to trust independent scientists 1  
*allow independent scientists not biased*
- (d) add (measured amount of) hydrogen 1  
*accept hydrogenation*
- any **two** from: 2
- (nickel) catalyst
  - hot / 60°C temperature
  - hardened  
*accept add a hard / hydrogenated fat / oil **or** make an emulsion*

[9]