

- M1.(a)**
1. Fewer children / less likely that children with asthma eat fish;
Accept converse.
 2. Fewer children / less likely that children with asthma eat oily fish;
MP1 and 2 – Allow use of numbers.
 3. Little / only 2% / no difference in (children with or without asthma who eat) non-oily fish.
Do not accept arguments related to amount of fish eaten

3

- (b)
1. (Shake with) ethanol / alcohol;
1. Accept named alcohol
 2. Then add (to) water;
2. Order must be correct
 3. White / milky / cloudy (layer indicates oil).
3. Ignore forms emulsion as in stem
3. Ignore precipitate

3

[6]

- M2.(a)**
1. Dissolve in alcohol, then add water;
 2. White emulsion shows presence of lipid.

2

- (b) Glycerol.

1

- (c) Ester.

1

- (d) **Y** (no mark)
Contains double bond between (adjacent) carbon atoms in hydrocarbon chain.

1

- (e) 1. Divide mass of each lipid by total mass of all lipids (in that type of cell);
2. Multiply answer by 100.

2

- (f) Red blood cells free in blood / not supported by other cells so cholesterol helps to maintain shape;

Allow converse for cell from ileum – cell supported by others in endothelium so cholesterol has less effect on maintaining shape.

1

- (g) 1. Cell unable to change shape;
2. (Because) cell has a cell wall;
3. (Wall is) rigid / made of peptidoglycan / murein.

2 max

[10]

M3.(a) Two suitable suggestions;

E.g.

1. (Are mammals so) likely to have same physiology / reactions as humans;
2. Small enough to keep in laboratory / produce enough milk to extract;
3. (Can use a) large number.

Ignore references to ethical issues

2 max

- (b) 1. Hydrolysis of lipids produces fatty acids;
2. Which lower pH of mixture.

2

- (c) 1. (Bile-activated lipase / it) increases growth rate (of kittens);
2. Results for formula with lipase not (significantly) different from breast milk / are (significantly) different from formula milk alone;
3. Showing addition of (bile-activated) lipase is the likely cause (of increased growth);
4. Lipase increases rate of digestion of lipids / absorption of fatty acids.

3 max

- M4.(a)**
1. Crush / grind;
 2. With ethanol / alcohol;
 3. Then add water / then add to water;
2. Water must be added after ethanol for third mark.
 4. Forms emulsion / goes white / cloudy;
4. Do not accept carry out emulsion test.

3

- (b) (i) 4 / four;

1

- (ii)
1. Phosphate / PO_4 ;
"It" refers to phospholipid.
 2. Instead of one of the fatty acids / and two fatty acids;
1. Accept minor errors in formula. Do not accept phosphorus / phosphorus group.

2

- (iii)
1. Double bonds (present) / some / two carbons with only one hydrogen / (double bonds) between carbon atoms / not saturated with hydrogen;
Answer refers to unsaturated unless otherwise clearly indicated.
May be shown in appropriate diagram.

2. In (fatty acid) **C** / 3;

2

- M5.** (a) Double bond(s);

(Bonds) between carbon;

C=C bond(s) = 2 marks

'No' C=C bond(s) disqualifies 1 mark only

Accept: does not contain maximum number of H for 1 mark

Neutral: contains C=O bonds

2

(b) Graph shows negative correlation / description given;

Correlation does not mean causation / prevention / shows lower risk not prevention;

May be due to another factor / example given;

Neutral: refs. to methodology e.g. sample size / line of best fit

Q: Do not allow 'casual' relationship

3

(c) (i) Glycosidic;

Accept: if phonetically correct

Reject: ester bond

1

(ii) Contains glycerol / three fatty acids / forms three ester bonds;

Neutral: contains less fatty acids

Answers must refer to a triglyceride

Ignore refs. to incorrect bond names

Neutral: olestra has eight fatty acids / R groups

Reject: contains three glycerols

1

(iii) 9;

1

[8]

M6.(a)

✓	✓	✓	
			✓

		✓	✓
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One mark for each correct column

Mark ticks only and ignore crosses

4

- (b) 1. Two marks for box round two hydrogens and one of the oxygens from OH groups on carbons 1 and 4;;
2. One mark from incorrect answer involving any two hydrogens and an oxygen from carbons 1 and 4;

Do not award marks if all atoms concerned are on same carbon atom or are on carbon atoms other than 1 and 4 or where the answer does not have two hydrogen and one oxygen

2

- (c) (i) 1. Holds chains / cellulose molecules together / forms cross links between chains / cellulose molecules / forms microfibrils, providing strength / rigidity (to cellulose / cell wall);
2. Hydrogen bonds strong in large numbers;x
Principles here are first mark for where hydrogen bonds are formed and second for a consequence of this.
Accept microfibrils

2

- (ii) Compact / occupies small space / tightly packed;
Answer indicates depth required. Answers such as "good for storage", "easily stored" or "small" are insufficient.

1

[9]

M7. Fatty acids used to make phospholipids;
Phospholipids in membranes;
More phospholipids more membranes made;

2 max

Fatty acids respired to release energy;
More triglycerides more energy released;
Energy used for cell production / production of named cell component;
Do not allow credit for 'making' energy

2 max

[4]