Question number	Answer	Notes	Marks
1 (a) (i)	A; (C) B; A;	Only one letter in each box	3
(ii)	1. (le) <u>emulsification</u> / <u>emulsifies</u>; 2. small(er) d ps / increased surface area / more drops; 3. optimum pH / correct pH / best pH; 4. ipase) is an enzyme; 5. d estion / breakdown; 6. i o <u>fatty acids</u> / into <u>glycerol</u>;		4
(b)(i)	villus / villi;	allow phonetic spelling	1

(ii)	1. larg surface area; 2. crovilli ; 3. pillaries; 4. vement of blood / concentration gradient / eq; 5. o cell thick / thin wall / thin / short distance; 6. ffusion; 7. active ansport;	1. ignor many villi idea 4. ig re cell wall	5

Total 13 marks

Question number	Answer	Notes	Marks
2(a) (i)	safety glasses / wear gloves ;	Ignore lab coat / tie hair back / eq	1
(ii)	11/ eleven;		1
(b) (i)	remove starch / solution from surface of syringe / eq;	Ignore get into syringe	1
			1
(ii)	mix <u>contents</u> / mix <u>amylase and starch</u> / eq;	Mix alone = 0 Allow enzyme and starch	1
(iii)	keep at correct temperature / keep temperature constant / eq;	Ignore fair test	

(c) (i)	1. volume / concentration of amylase; 2. volume / concentration of starch; 3. volume / concentration of iodine / drops of iodine; 4. volume / concentration of mixture;	Allow amount only once	2
(ii)	temperature;	Ignore time	1
(d)	1. 6 minutes / between 5 and 6 minutes / eq; 2. iodine stays yellow / orange / brown / iodine stays same colour / colourless / not blue black; 3. no starch present; 4. digested/broken down ;	Reject 6-7 mins	3

Question number	Answer	Notes	Marks
(e)(i)	1. fewer wells with blue black colour / more wells yellow / orange / brown / colourless / eq; 2. starch digested sooner / quicker / reaction completed sooner / eq;		2
(ii)	1. enzymes work faster at 40^0C / ref to optimum / eq; 2. more (kinetic) energy / molecules move faster / eq; 3. more collisions / more enzyme substrate complexes /eq;	Ignore ref to denature	2

Total 15 marks

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>3 (a)</td><td>
<table>
<tr><th>Large food molecule</th><th>Enzyme involved in digestion</th><th>Small food molecule produced</th></tr>
<tr><td>starch</td><td>amylase</td><td>glucose / maltose;</td></tr>
<tr><td>protein;</td><td>protease</td><td>amino acids / polypeptides / peptides;</td></tr>
<tr><td>lipid</td><td>lipase;</td><td>fatty acids / glycerol;</td></tr>
</table>
</td><td>Ignore simple sugars</td><td>5</td></tr>
<tr><td>(b)</td><td>1. large surface area / microvilli;
2. thin / short diffusion distance / eq;
3. blood / capillaries / eq;
4. permeable;
5. lacteal;</td><td>Ignore many villi / long villi</td><td>3</td></tr>
</table>

Total 8 marks

Question number	Answer	Notes	Marks
4 (a)	(trap/absorb) light / eq; chlorophyll; photosynthesis / starch / glucose / eq;	ignore trap energy	2
(b)	A cell wall; B vacuole; C cytoplasm;		3
(c) (i)	C; A;		2
(ii)	starch removed / starch used / no starch / eq; (converted to) glucose; respiration / energy;		2
(iii)	boil (in ethanol) / heat (in ethanol)/ eq; ethanol / alcohol; no naked flame / water bath / hot water / in water / eq;	allow water mark if linked to boil / heat	3
(iv)	iodine / iodide;		1
		Total	13

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>5(a)</td><td>1. iodine;
2. bl / black / blue black = starch;
3. Benedict’ / eq;
4. heat / se water bath / eq;
5. r / orange / yellow / green = glucose;</td><td>if iodine for glucose goes blue black = 0
only award Mp1 and Mp3 if linked to correct test
heat must be linked to Benedict’s</td><td>4 max</td></tr>
<tr><td>(b)</td><td><table>
<tr><td>Group</td><td>Example from the group</td><td>Molecule used to store carbohydrate</td></tr>
<tr><td>animals</td><td></td><td>glycogen;</td></tr>
<tr><td>plants</td><td>(maize)</td><td>starch / sucrose;</td></tr>
<tr><td>fungi</td><td>mucor / yeast / mushroom / mould / eq;</td><td>glycogen;</td></tr>
</table></td><td>Ignore in plants sugar / glucose / fructose
Allow
Fomes formentarius / eq</td><td>4</td></tr>
</table>

Total 8 marks

Question number	Answer	Notes	Marks
6	C plus and minus statin(s) / range / eq; O same gender / same age / same mass / same level of cholesterol / eq; R several people / group of people / repeat the test / eq; M1 measure cholesterol level; M2 at start and at end / time stated / measure change; S1+ S2 same diet / same mass of food / same stress / same exercise / same smoking / eq;;	allow principles if lab based allow if use animals ignore temperature / light / water	6