

	Answers	Marks	Guidance for Examiners
1 (a) (i)	provides, sufficient energy / energy for needs ; provides, molecules / materials, for metabolism / equivalent ; provides, nutrients / named nutrients i.e. CPFVM H ₂ O fibre ; in correct / right, quantities / proportions / amounts ;	[max 3]	A substances fibre – accept roughage and non-starch polysaccharide. A minimum of any three named nutrients A contains (all the) food, groups / types / classes R ‘substances’ A adequate / sufficient R ‘equal’
(ii)	age ; sex / gender ; activity / exercise; pregnancy / lactation ; growth / body building ; ambient temperature / climate / weather ; disease / medical condition / illness ; allergy / food intolerance ; size / body mass / build ;	[max 3]	A weight I height
(b) (i)	horizontal line at 180 mg per 100 cm ³ ;	[1]	A tolerance of half-square up or down
(ii)	60 to 300 minutes <i>Units essential</i>	[1]	A 240 minutes / 4 hours
(iii)	increases after time when glucose is ingested, decreases, but stays below or touches 180 / line from b(i) throughout ;	[1]	
(c)	insulin secreted / produced / released ; by pancreas ; glucose absorbed (by liver / muscles) ; stored as / converted to , glycogen ;	[max 3]	
		[Total:12]	

Question	E Answers	Marks														
2 (a)	<table border="1" data-bbox="427 269 1236 621"> <thead> <tr> <th data-bbox="427 269 1016 319">function</th> <th data-bbox="1016 269 1236 319">letter</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 319 1016 368">peristalsis</td> <td data-bbox="1016 319 1236 368">B</td> </tr> <tr> <td data-bbox="427 368 1016 418">protein digestion</td> <td data-bbox="1016 368 1236 418">C / H / E ;</td> </tr> <tr> <td data-bbox="427 418 1016 468">insulin production</td> <td data-bbox="1016 418 1236 468">D ;</td> </tr> <tr> <td data-bbox="427 468 1016 518">deamination</td> <td data-bbox="1016 468 1236 518">J ;</td> </tr> <tr> <td data-bbox="427 518 1016 568">partially digested food is mixed with bile</td> <td data-bbox="1016 518 1236 568">H ;</td> </tr> <tr> <td data-bbox="427 568 1016 621">most water is reabsorbed</td> <td data-bbox="1016 568 1236 621">E ;</td> </tr> </tbody> </table>	function	letter	peristalsis	B	protein digestion	C / H / E ;	insulin production	D ;	deamination	J ;	partially digested food is mixed with bile	H ;	most water is reabsorbed	E ;	[5]
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(b) (i)	<table border="1" data-bbox="427 722 1025 984"> <thead> <tr> <th data-bbox="427 722 665 787">large molecule</th> <th data-bbox="665 722 1025 787">nutrients absorbed</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 787 665 852">protein</td> <td data-bbox="665 787 1025 852">acids ;</td> </tr> <tr> <td data-bbox="427 852 665 917">glycogen</td> <td data-bbox="665 852 1025 917">/ $C_6H_{12}O_6$;</td> </tr> <tr> <td data-bbox="427 917 665 984">fat</td> <td data-bbox="665 917 1025 984">fat acids and glycerol ;</td> </tr> </tbody> </table>	large molecule	nutrients absorbed	protein	acids ;	glycogen	/ $C_6H_{12}O_6$;	fat	fat acids and glycerol ;	[3]						
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(ii)	calcium / Ca^{2+} ; iron / Fe^{2+} ;	[2]														
(iii)	vitamins / named vitamin ;	[1]														

(c)	<p>MP1 platelets ; MP2 promote / cause / stimulate, clotting ; MP3 thrombin / enzyme ; MP4 (converts) fibrinogen to fibrin ; MP5 soluble to insoluble / fibrin is insoluble ; MP6 mesh / network / web, to trap blood (cells) / prevent blood loss ; MP7 forms scab / hardens ; MP8 phagocytes, engulf / destroy / AW, bacteria / pathogens ; MP9 cells divide by mitosis ; MP10 identical cells ; MP11 (tissues form to) make / grow, epidermis / capillary / new skin ;</p>	[max 5]
		[Total: 16]

Question	E Answers	Marks	Additional Guidance
3 (a)	microvilli ;	[1]	
(b)	water ; glucose ; ions ; amino acids ; vitamins ; oxygen ;	[max 3]	
(c)	1 (microvilli) give large surface area ; 2 (large surface area) for diffusion ; 3 (large surface area / mitochondria) for active transport ; 4 ref to, carriers / proteins, (in membranes) ; 5 mitochondria, to provide energy ;	[max 2]	
(d)	small intestine / duodenum / ileum ;	[1]	
		[Total: 7]	

Question	Answers	Mark	Additional Guidance
4 (a)	<p>from the top capillary ; epithelium / goblet cell(s) ;</p> <p>lacteal / lymph(atic) vessel / lymph(atic) capillary ;</p>	[3]	<p>ignore blood vessel ignore any qualification of epithelium e.g. ciliated epitheli R lymph unqualified</p>
(b) 1	<p>(contracts to) move villus ;</p> <p><i>MP 2, 3 and 4 must be linked to the idea of movement</i></p>		<p>A side to side / up and down / waves about R 'push the food along', 'support', 'keeps it in place'</p> <p>A change the shape</p> <p>absorption must be qualified in some way ignore assimilation</p>
2	idea that exposes villus to more food / changes surface area ;		
3	increases / helping / AW, absorption ;		
4	increase / maintain, diffusion / concentration, gradient ;		
5	(helps to) empty lacteal / move blood / move lymph ;	[max 2]	
(c)	<p>either active transport ; A absorption</p> <p>against concentration gradient / uses energy / needs ATP / ref. to carrier molecules / ref. to protein pumps ;</p> <p>or respiration ;</p> <p>used for energy / release of energy ; R produce energy</p>	[max 2]	<p>one mark for the process and one mark for the explanation</p> <p>allow idea that the concentrations are the same (initially) so can't be diffusion / must be active transport</p>

Question	Answers	Mark	Additional Guidance
4 (d) 1 2 3 4 5 6	<i>small intestine</i> <i>idea that <u>glucose</u>, taken up by cells / moved outside bag ;</i> lower water potential outside bag ; A ora water, moves / diffuses, out of bag ; by osmosis ; <i>Visking tubing</i> no difference in, water potential / concentration ; no (net), osmosis / diffusion of water ; R 'no diffusion'	[max 3]	<i>if bag not identified assume 'it' is the small intestine</i>
(e) (i)	stomach ;	[1]	
(ii)	small intestine / ileum / duodenum ;	[1]	
(iii) 1 2 3 4 5 6 7	for breakdown of (large / insoluble) food (molecules) / hydrolysis ; (used in) <u>chemical digestion</u> ; solvent / for dissolving, enzymes / named secretion ; solvent / for dissolving, food ; A named small food molecule(s) <i>could be either soluble components of food or products of digestion</i> softens food ; makes it easier to move food (in alimentary canal) / AW ; makes it easier to, chew / swallow / egest ;	[max 3]	A alkali / bile (salts) / named enzyme(s) glucose / sugar / amino acids / fatty acids / glycerol / vitamins / minerals / ions A acts as a lubricant
(iv) 1 2 3 4	<i>prevents</i> loss of, large volume of / lots of water ; loss of, ions / salts (in solution) ; diarrhoea ; dehydration / ora ;	[max 2]	if none of the expected answers accept 5 any function of water in the body for max 1 e.g. transport / sweating / excretion solvent / medium for reactions / reactant R 'turgidity of cells' / respiration
[Total: 17]			