	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_2O 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 *Units essential*	[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]	

<table>
<tr><th>Question</th><th>E Answers</th><th>Marks</th></tr>
<tr><td>2 (a)</td><td>
<table>
<tr><th>function</th><th>letter</th></tr>
<tr><td>peristalsis</td><td>B</td></tr>
<tr><td>protein digestion</td><td>C / H / E ;</td></tr>
<tr><td>insulin production</td><td>D ;</td></tr>
<tr><td>deamination</td><td>J ;</td></tr>
<tr><td>partially digested food is mixed with bile</td><td>H ;</td></tr>
<tr><td>most water is reabsorbed</td><td>E ;</td></tr>
</table>
</td><td>[5]</td></tr>
<tr><td>(b) (i)</td><td>
<table>
<tr><th>large molecule</th><th>nutrients absorbed</th></tr>
<tr><td>protein</td><td>acids ;</td></tr>
<tr><td>glycogen</td><td>/ $C_6H_{12}O_6$;</td></tr>
<tr><td>fat</td><td>fat acids and glycerol ;</td></tr>
</table>
</td><td>[3]</td></tr>
<tr><td>(ii)</td><td>calcium / Ca^{2+} ;
iron / Fe^{2+} ;</td><td>[2]</td></tr>
<tr><td>(iii)</td><td>vitamins / named vitamin ;</td><td>[1]</td></tr>
</table>

(c)	**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 **;**	[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 2 3 4 5	(microvilli) give large surface area ; (large surface area) for diffusion ; (large surface area / mitochondria) for active transport ; ref to, carriers / proteins, (in membranes) ; mitochondria, to provide energy ;	[max 2]	
(d)	small intestine / duodenum / ileum ;	[1]	
		[Total: 7]	

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

Question	E answers	Mark	Additional Guidance
4 (d) 1 2 3 4 5 6	*small intestine* *idea that* glucose, taken up by cells / moved outside bag **;** lower water potential outside bag **; A** ora water, moves / diffuses, out of bag **;** by osmosis **;** *Visking tubing* no difference in, water potential / concentration **;** no (net), osmosis / diffusion of water **; R** 'no diffusion'	[max 3]	*if bag not identified assume 'it' is the small intestine*
(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) chemical digestion **;** solvent / for dissolving, enzymes / named secretion **;** solvent / for dissolving, food **; A** named small food molecule(s) *could be either soluble components of food or products of digestion* 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	*prevents* 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]	