Question 10 (Answer: **B**)

- Bile contains no enzymes at all.
- It emulsifies fat, breaking large droplets into many small ones.
- That increases the surface area for lipase to work on – and it makes conditions alkaline, not acidic.

Question 11 (Answer: **A**)

- Trypsin is made by the pancreas and released into the duodenum.
- It is a protease, so it digests protein.
- It breaks proteins down into peptides and then amino acids.

Question 7 (Answer: **B**)

- The duodenum is the first part of the small intestine.
- Pancreatic and intestinal enzymes act there, so chemical digestion is completed.
- Ingestion happens at the mouth, egestion at the anus, and assimilation inside the body cells.

Question 9 (Answer: **D**)

- Amino acids and glucose are absorbed in the small intestine, not the colon.
- The colon absorbs mainly *water* and some ions.
- So match each small molecule to the small intestine, and only water to the colon.

Question 11 (Answer: **A**)

- Chemical digestion uses enzymes to break molecules into smaller ones.
- Starch to reducing sugars is exactly that, catalysed by amylase.
- Chewing and churning are *physical* digestion – the molecules themselves are unchanged.

Question 12 (Answer: **B**)

- Lipase breaks down fats and oils.
- The products are fatty acids and glycerol.
- So look for oil as the substrate, not starch, maltose or protein.

Question 12 (Answer: **B**)

- Protein digestion begins in the stomach, with pepsin in acid conditions.
- It is not the mouth – only starch digestion starts there.
- So find the stomach: the wide muscular sac below the oesophagus.

1(a)

name of structure	function	letter in Fig. 1.1
anus	egestion / removal of, undigested food / faeces	**G**
salivary glands / pancreas	produce amylase	**M / D**
gall bladder	stores bile	**L**
oesophagus	transports food to the stomach	**B**

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1(b)(i)	(the breakdown) of large molecules into small molecules ; idea of (only) small molecules can be absorbed ; idea of insoluble (molecules) to soluble (molecules) ;
1(b)(ii)	glucose ;
1(b)(iii)	(the membranes of the) epithelium lining, epithelial cells (of, small intestine / villi) ;
1(b)(iv)	*any six from:* 1 stomach produces, gastric juice / hydrochloric acid / HC*l* ; 2 acidic / low pH, in stomach ; 3 (acid) denatures, amylase / enzyme ; 4 changes shape of the active site ; 5 (active site) no longer complementary (shape) to, substrate / starch ; 6 cannot form enzyme-substrate complexes ; 7 bile is released into the, small intestine / duodenum ; 8 bile is an alkaline mixture ; 9 neutralises the acidic mixture ; 10 *idea of* suitable pH for amylase to work in small intestine ;

Question 14 (Answer: **B**)

- Stomach contents arrive in the small intestine strongly acidic from the gastric juice.
- Bile is alkaline and is released into the duodenum.
- It neutralises the acid, raising the pH so the intestinal enzymes can work.