6.1 Digestion & Absorption

Mark Schemes

Course	DP IB Biology
Section	6. Human Physiology
Topic	6.1 Digestion & Absorption
Difficulty	Medium

To be used by all students preparing for DP IB Biology SL
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1

The correct answer is **B**; contractions work in a wave-like motion which prevents the partially digested food from moving backwards.

A is incorrect because the muscles involved in peristalsis are both examples of smooth muscle and not striated.

C is incorrect because skeletal muscles are not involved in peristalsis, and there are no valves in the alimentary canal.

D is incorrect; the action of the muscle types are the wrong way round.

2

The correct answer is **A**; the specific enzyme required to break down cellulose is not produced by the human body.

B is incorrect; cellulose is required to provide fibre for healthy gut function.

Despite **C** being a correct feature of cellulose, it does not give the reason that cellulose cannot be digested.

D is incorrect because without the correct specific enzyme, more time for digestion of cellulose would make no difference.

3

The correct answer is **C**.

A is incorrect because lactose is a disaccharide and galactose is a monosaccharide; it is α-Glucose and galactose that combine to form lactose.

Maltose in **B** is formed from two molecules of α-Glucose.

D is incorrect because it contains β-Glucose rather than α-Glucose.

4

The correct answer is **B**; starch digestion involves enzymes in the cell surface membranes of the microvilli, takes place mainly in the small intestine, and is aided by amylase (both salivary and pancreatic), maltase, dextrinase, and glucosidase.

C is incorrect because amylase cannot break down the 1,6 glycosidic bonds in amylopectin.

5

The correct answer is **A**; glucose cannot move by simple diffusions as it is polar and therefore hydrophilic.

Options **B**, **C** and **D** all describe processes which are involved in the absorption of nutrients in the small intestine.

6

The correct answer is **C** because the visking tubing has small pores which allow small molecules through; it can therefore be used to model the absorption of some digested food molecules.

A is incorrect; the visking tubing represents the small intestine and not the stomach.

B is incorrect because the set up cannot show active transport.

D is incorrect because the visking tubing does not represent the increased surface area of the intestines accurately.

7

The correct answer is **C**.

A is incorrect because bile is produced in the liver and maltase is an immobilised enzyme of the small intestine.

B is incorrect because pepsin is produced in the stomach.

D is incorrect because lactase and sucrase are produced in the small intestine.

8

The correct answer is **B** because ingestion stimulates the release of hormones in the stomach which trigger the production of pancreatic enzymes.

A, C and **D** are not correct as insulin and glucagon levels are determined by the glucose content of the blood and so would not change until the glucose from the ingested food has reached the bloodstream after digestion.

9

The correct answer is **C**; as well as the stomach, proteases are produced and secreted by the pancreas in the pancreatic juices.

A, B and **D** are all incorrect. Although proteases may be found in the small intestine, they are not **secreted** into the alimentary canal there. Instead they arrive in the pancreatic juice along with other digestive enzymes, or are found in the cell surface membranes of the cells lining the small intestine.

10

The correct answer is **C**.

A, **B** and **D** are incorrect because the serosa is the outer coat furthest from the villi, the longitudinal muscle is the layer just above the serosa, and the circular muscle is the layer above that.