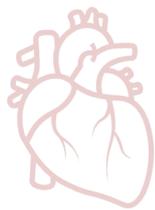


Human Nutrition

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- 2 (a) A person ate a meal containing starch and fat.

Fig. 2.1 shows some events that occurred after ingesting this meal.

P	absorption of nutrients in the villi
Q	assimilation of fatty acids in the liver
R	breakdown of large food particles by the teeth
S	movement of small food particles through the oesophagus
T	secretion of amylase from the salivary glands

Fig. 2.1

Put the events in Fig. 2.1 into the correct sequence. One has been done for you.

R				
----------	--	--	--	--

[2]

- (b) The stomach lining contains cells that secrete proteins.

(i) State the names of **two** cell structures that are involved in making or secreting proteins.

1

2

[2]

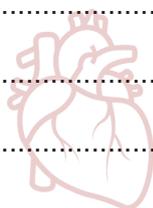
(ii) State the name of **one** component of gastric juice **and** describe its functions.

.....

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.....

.....



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.....

[3]

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(iii) There are goblet cells in many parts of the alimentary canal.

State the substance that goblet cells secrete.

..... [1]

(c) Emulsification of fats occurs in the alimentary canal.

(i) Describe the process of emulsification of fats.

.....
.....
.....
.....
..... [2]

(ii) State the name of the organ in the alimentary canal where fats are emulsified.

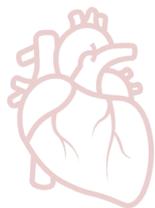
..... [1]

(iii) State the name of the structure in the villi where digested fats are absorbed.

..... [1]

[Total: 12]

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2 Fig. 2.1 is a vertical section of a human molar tooth and surrounding structures.

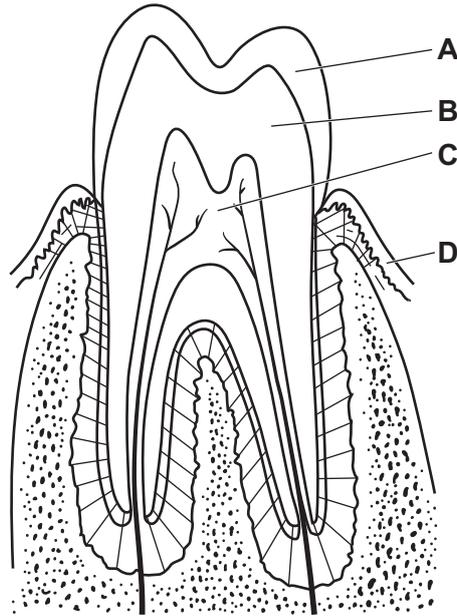


Fig. 2.1

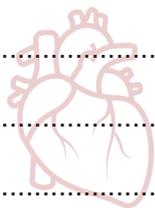
(a) State the names of the parts labelled **A** to **D** on Fig. 2.1.

- A
- B
- C
- D

[4]

(b) Describe **and** explain the function of molar teeth.

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[3]

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1 (a) State **three** uses of energy in the human body.

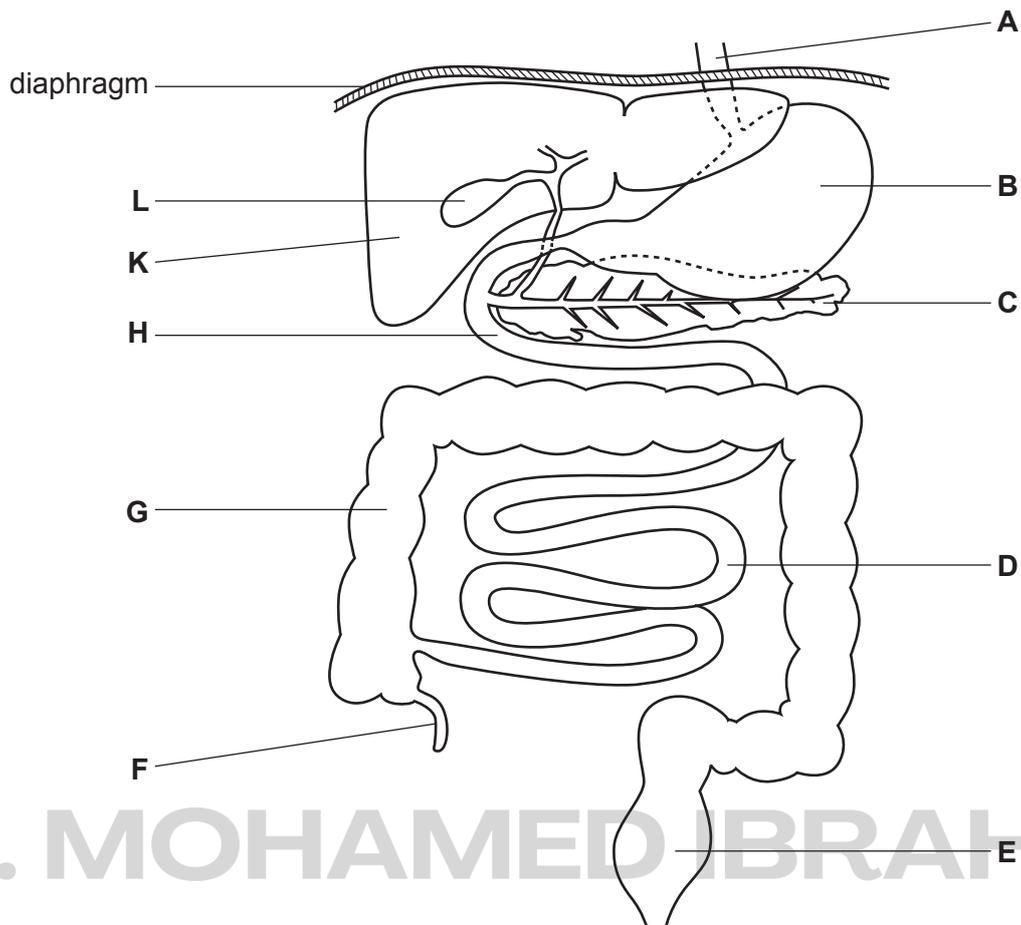
1

2

3

[3]

(b) Fig. 1.1 shows part of the digestive system of a human.



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Fig. 1.1



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Complete Table 1.1. One row has been done for you.

Table 1.1

function	name of structure	letter from Fig. 1.1
pushes food to the stomach	oesophagus	A
assimilation of amino acids to produce plasma proteins		
storage of bile		
secretion of insulin		
absorption of fatty acids and glycerol		
secretion of pepsin		
digestion of starch		

[6]

(c) Describe the role of the liver in the recovery from oxygen debt after strenuous exercise.

.....
.....
.....

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(d) Alcohol is a drug.

Define the term drug.

.....
.....

Drugs & Diseases [2]

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8

- 3 Carbohydrates are an important component of a balanced diet.

The flow chart in Fig. 3.1 shows some of the processes that happen to carbohydrates in food that is eaten.

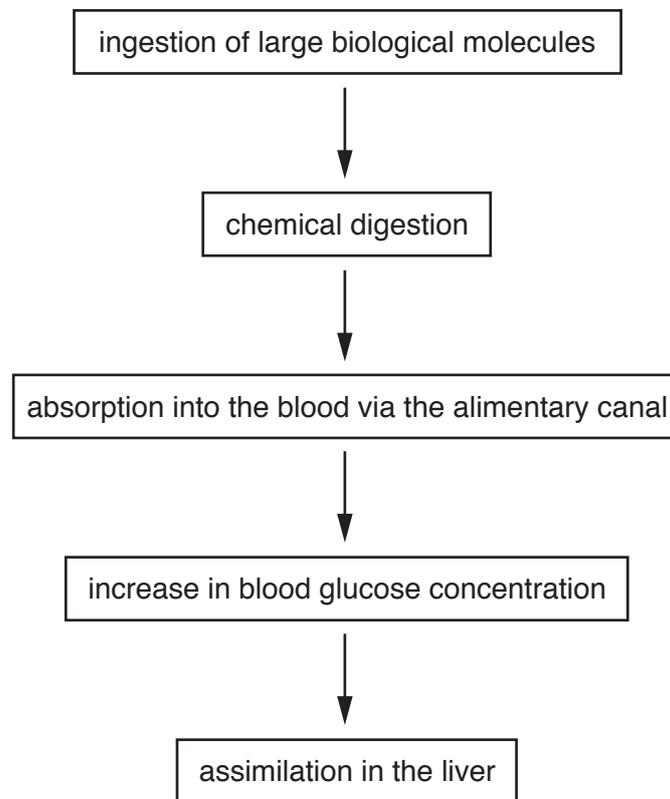


Fig. 3.1

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3 Cells in the lining of the stomach secrete gastric juice, which contains hydrochloric acid and pepsin.

(a) (i) State **two** roles of hydrochloric acid in the stomach.

1

2 [2]

(ii) Describe the function of pepsin.

.....

.....

.....

..... [2]

(b) Define the term *assimilation*.

.....

.....

.....

..... [2]

(c) There are stem cells in the epithelial tissue that forms the lining of the stomach.

Explain why these stem cells are necessary.

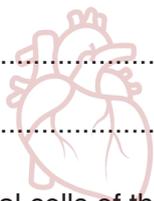
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.....

.....

.....

..... [2]



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(d) The epithelial cells of the small intestine have many microvilli.

State the role of the microvilli.

.....

.....

.....

..... [2]

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3

(c) Substances that are absorbed from the alimentary canal may enter cells and become part of the cells.

(i) State the storage carbohydrate made from glucose in liver cells.

.....[1]

(ii) State the type of protein used in the immune system that is produced from amino acids by lymphocytes.

.....[1]

(iii) Fat is produced from fatty acids and glycerol by cells in the fatty tissue beneath the skin.

State **one** function of this layer of fat.

.....[1]

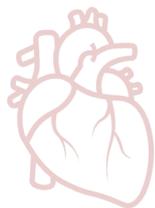
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[Total: 10]

(b) Explain the importance of chemical digestion.

.....
.....
.....
.....
.....
.....[2]

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(c) Fig. 1.2 shows the human alimentary canal and associated organs.

The functions of some of these parts of the body are given in Table 1.1.

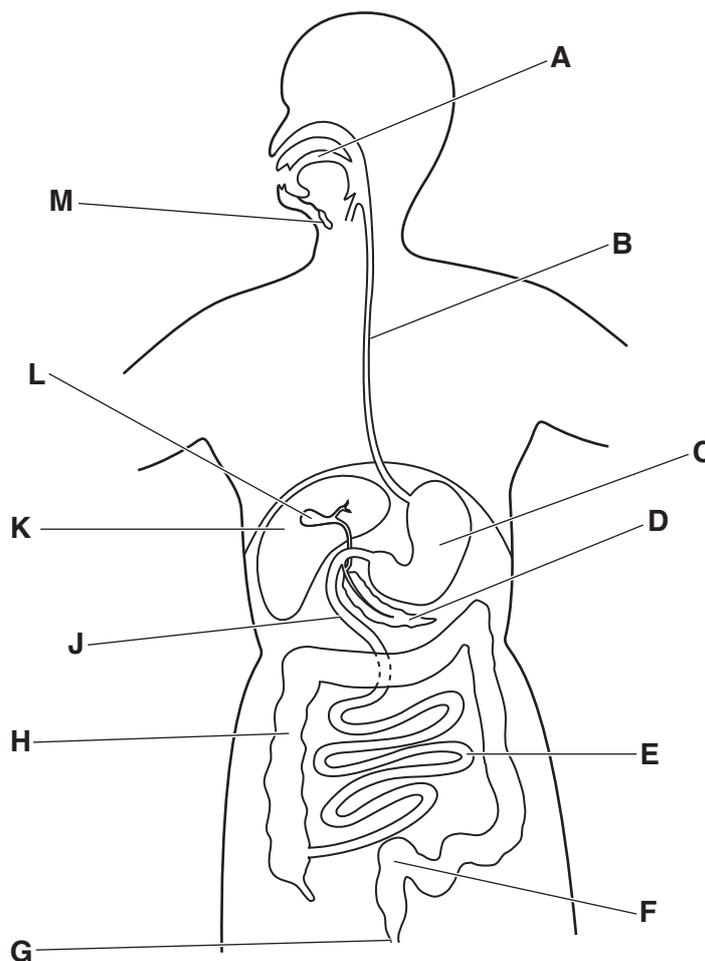


Fig. 1.2

Complete Table 1.1. One row has been done for you.

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Table 1.1

function	letter from Fig. 1.2	name of structure
site of starch digestion		
reabsorption of water		
secretion of pepsin		
site of maltose digestion		
secretion of bile		
storage of faeces	F	rectum
secretion of lipase and trypsin		

[6]

6 (a) Define the term *chemical digestion*.

.....

.....

.....[2]

(b) A student investigated the activity of the digestive enzyme pepsin.

Fig. 6.1 shows the apparatus used in the investigation.

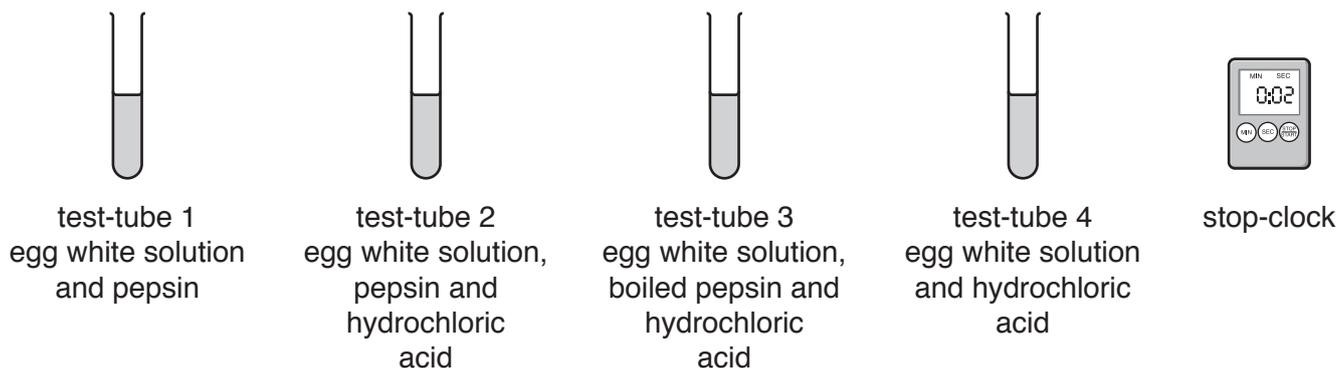


Fig. 6.1

The appearance of the four test-tubes was recorded at 0 and 5 minutes.

The protein in the egg white solution gives the solution a cloudy appearance.

The cloudy appearance clears when the protein in the egg white solution breaks down.

Table 6.1 shows the results.

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Table 6.1

test-tube	contents	appearance at 0 mins	appearance after 5 mins
1	egg white solution, pepsin	cloudy	less cloudy
2	egg white solution, pepsin, hydrochloric acid	cloudy	clear
3	egg white solution, boiled pepsin, hydrochloric acid	cloudy	cloudy
4	egg white solution, hydrochloric acid	cloudy	cloudy

