

ANIMAL NUTRITION

1 HOUR

ANSWER ALL THE QUESTIONS

50 marks

1]

Enzymes are necessary for many biological processes, such as the digestion of fat.



(a) (i) Explain why enzymes are necessary for biological processes.

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.....  
.....  
.....  
.....  
.....  
..... [3]

(ii) Lipase, protease and amylase are enzymes secreted into the alimentary canal.

Name **one** organ that secretes each enzyme. Choose your answers from this list.

- colon            gall bladder            liver
- pancreas        rectum                salivary glands

You can use each organ **only once**.

lipase .....  
protease .....  
amylase ..... [3]

2 Fig. 3.1 shows part of the thoracic and abdominal cavities of a human.

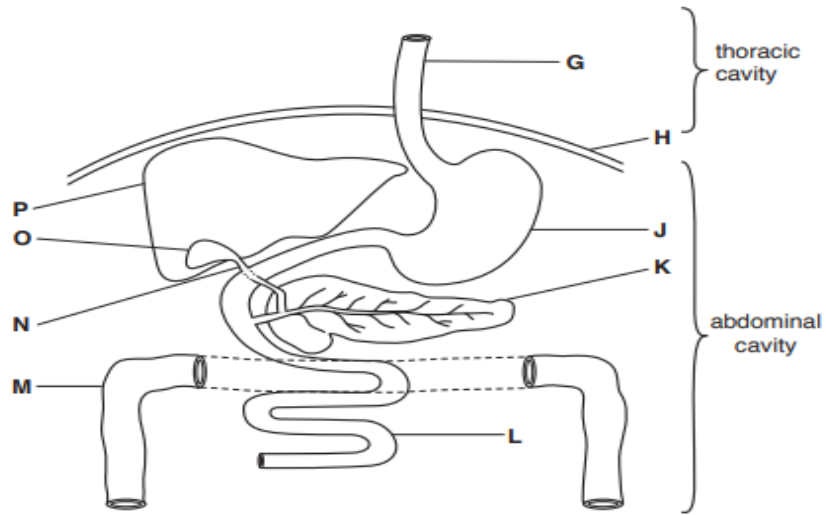


Fig. 3.1

(a) (i) Name the structures labelled G, H and M.

- G .....
- H .....
- M .....

[3]

(ii) Table 3.1 shows five functions of organs in the abdominal cavity.

Complete the table by:

- naming the organ that carries out each function
- using the letters from Fig. 3.1 to identify the organ named.

One row has been completed for you.

Table 3.1

function	name	letter from Fig. 3.1
conversion of glucose to glycogen		
secretion of insulin and glucagon	pancreas	K
absorption of products of digestion		
storage of bile		
chemical digestion of protein in an acidic pH		

[4]

(b) Fat is particularly difficult to digest as it is not water soluble and forms spherical globules in the alimentary canal.

Fig. 3.2 is a diagram showing what happens to fat globules when mixed with bile.

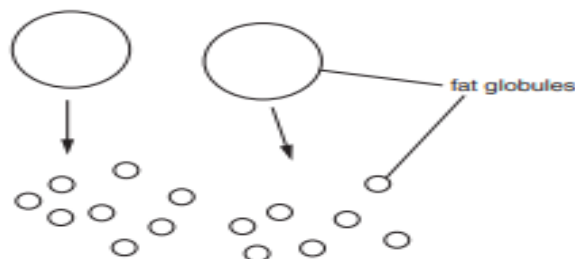


Fig. 3.2

(i) Name the process shown in Fig. 3.2.

.....[1]

3 (a) Describe how food is moved along the small intestine.

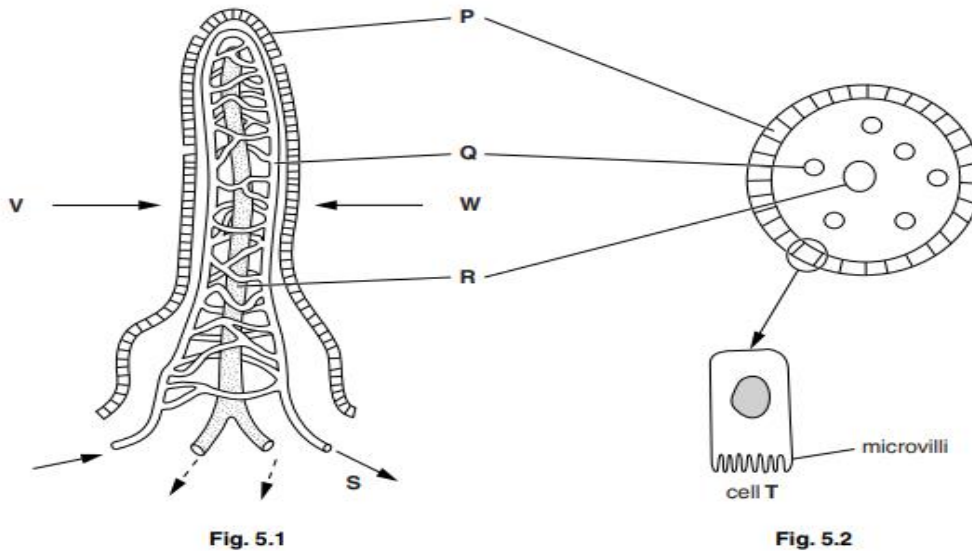
.....  
 .....  
 .....  
 ..... [2]

(b) The small intestine is lined by many villi.

Fig. 5.1 shows a longitudinal section of a villus.

Fig. 5.2 shows a cross-section of the same villus at V – W.

The diagrams are not drawn to the same scale.



(i) Name structures P, Q, and R.

P .....  
 Q .....  
 R ..... [3]

(ii) The blood that flows from S enters a vein.

Name the vein that transports blood away from the small intestine.

..... [1]

(iii) Cell T is an example of the cells that form the surface of the villi.

Explain why there are many microvilli on cell T.

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

(iv) Some of the cells on the surface of the villi secrete mucus for protection.

Suggest what the villi need to be protected against.

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

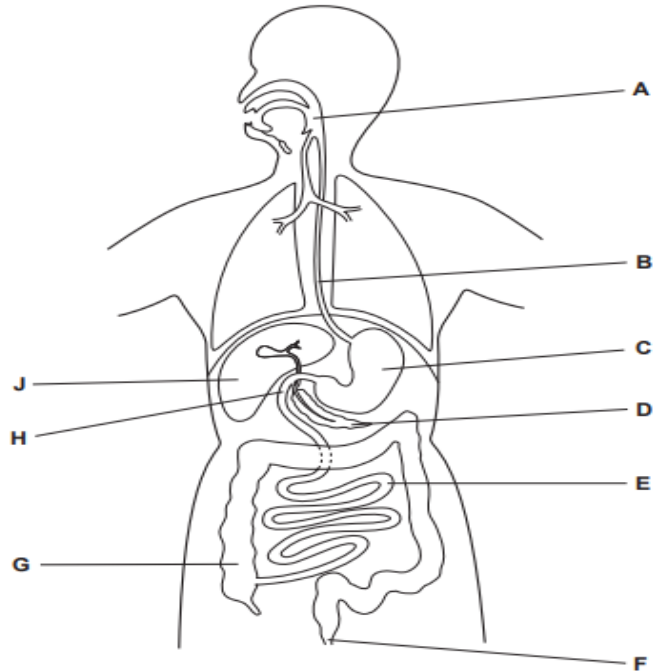


4 The alimentary canal is adapted for chemical and mechanical digestion.

(a) Explain how chemical digestion differs from mechanical digestion.

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.....  
.....  
.....  
..... [3]

Fig. 5.1 is a diagram of the human alimentary canal.



Name the parts A to f

[3]

(b) Table 5.1 shows four functions of the alimentary canal.

Complete the table by:

- naming the part of the system that carries out each of the functions;
- using the letters from Fig. 5.1 to identify the part of the system named.

One row has been completed for you.

**Table 5.1**

function	name of part	letter from Fig. 5.1
produces bile	liver	<b>J</b>
most soluble food is absorbed into the blood		
indigestible food is egested		
hydrochloric acid is produced		
protease, lipase and amylase are produced		

[4]

(c) Some people develop gallstones, made of cholesterol, that accumulate in the gall bladder and the bile duct. Gallstones block the flow of bile.

Explain how gallstones can affect the digestion of fat.

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[3]

5. explain the following terms

- Digestion
- Peristalsis
- ingestion
- Emulsification
- egestion.

[10]