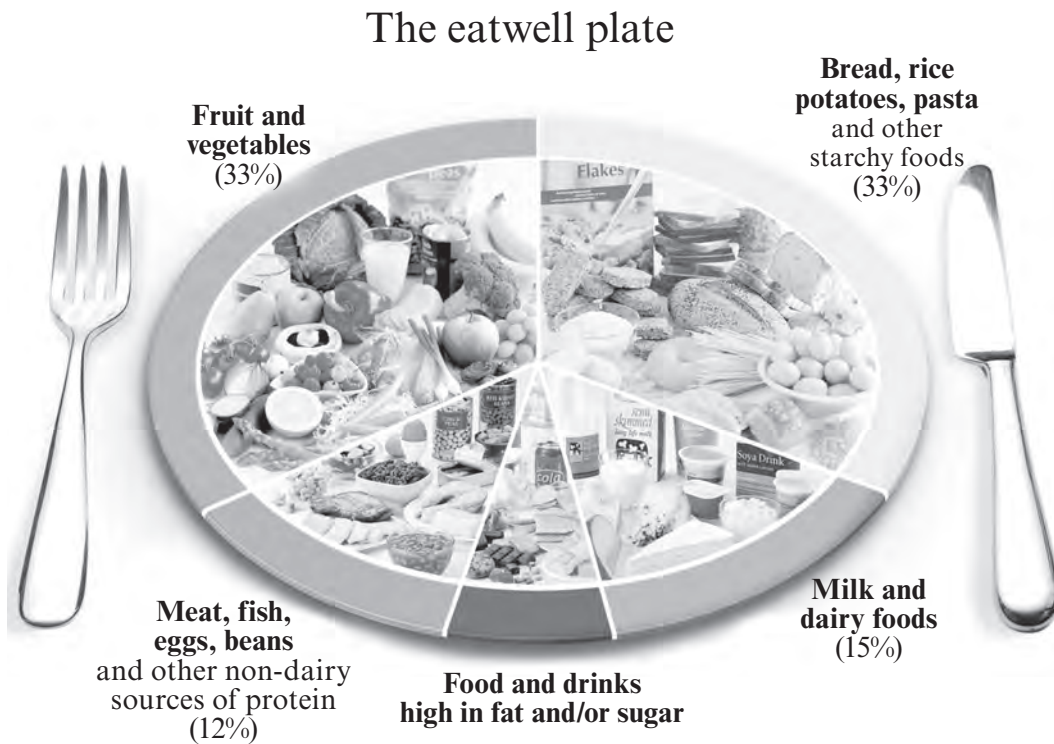


Biology 1.3 - Digestion & Digestive System in Humans - Higher Tier

Examiner
only

Question 1.

- (a) The eatwell plate shows the types and percentages of foods that we should eat for a healthy diet.

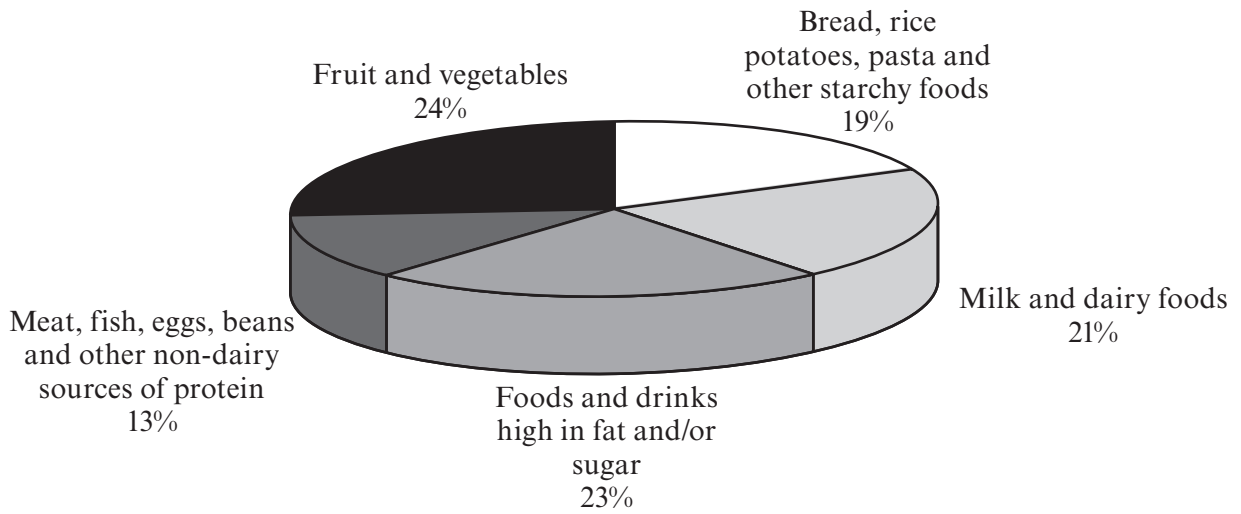


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Calculate the percentage of the eatwell plate that should come from **Foods and drinks high in fat and/or sugar**. Show your working. [2]

Answer %

(b) The chart below shows the percentages of different types of food bought at the shops.



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Which **three** types of food are bought in a greater percentages than shown in the eatwell plate? Tick (✓) the three boxes. [1]

- Meat, fish, eggs
- Fruit and vegetables
- Bread, rice, potatoes, pasta
- Milk and dairy foods
- Foods and drinks high in fat and/or sugar

(c) The table below shows the fat content of a meal.

Food	Fat content (g)
Doner kebab	50.2
Mayonnaise	11.5
Packet of crisps	11.5
Doughnut	13.3
Total	86.5

The Guideline Daily Amount of fat for an average female is 70g.
Calculate the excess fat content of this meal.

[1]

Answer g

(d) Why do food labels often give information on fat content **per 100g of food**?

[1]

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(e) Explain why it is unhealthy to eat too much fat.

[2]

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(f) Give **one** use for fat in the human body.

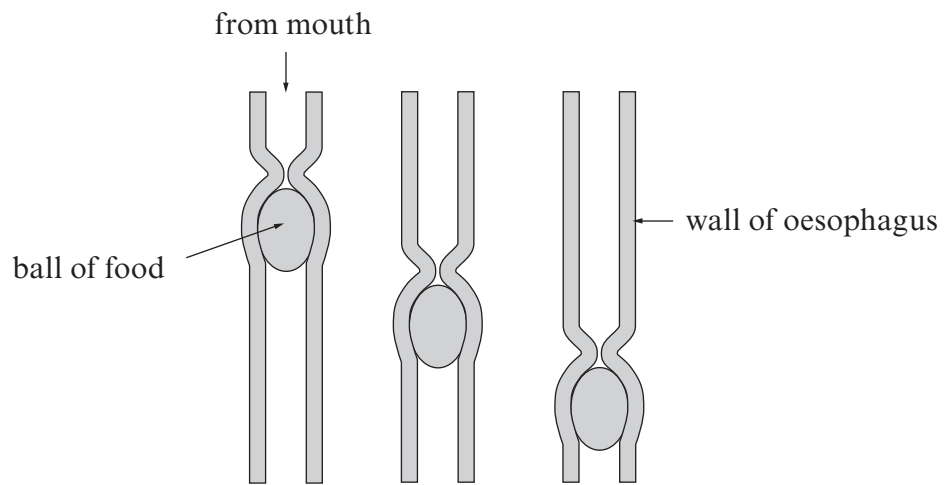
[1]

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Question 2.

The diagram shows a ball of food moving along the oesophagus (gullet).

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(a) What name is given to this process?

[1]

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(b) Explain how the ball of food is moved along the oesophagus.

[2]

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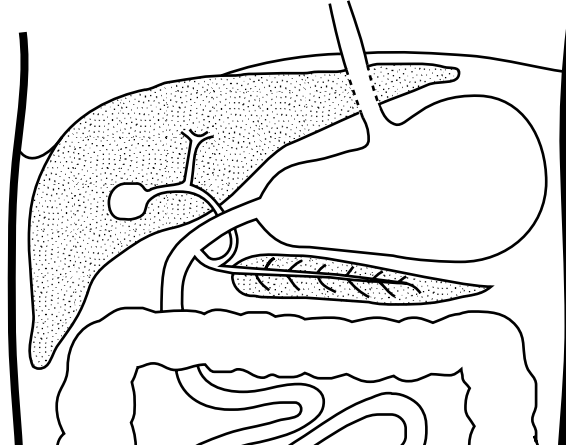
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Question 3.

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The diagram shows part of the human digestive system.



(a) (i) Name the organ shown in the diagram above which: [1]

I. secretes bile;

II. label this organ on the diagram above.

(ii) Name the organ shown in the diagram above which: [1]

I. stores bile;

II. label this organ on the diagram above.

(b) The table below shows the results of an experiment to investigate the digestion of olive oil (a lipid). The contents of three test tubes are shown in the table. The contents of the test tubes were analysed for the presence of fatty acids every 5 minutes for a period of 30 minutes.

Tube	Test samples	Time (minutes)						
		0	5	10	15	20	25	30
1	water + oil	-	-	-	-	-	-	-
2	water + oil + bile	-	-	-	-	-	-	-
3	water + oil + bile + lipase	-	+	++	+++	++++	++++	++++

Key: - = no fatty acids present

+ = fatty acids present

- (i) Bile plays a very important role in the digestion of lipids but the results in Tube 2 show that it is not directly involved in the production of fatty acids. Describe the role played by bile in the digestion of lipids. [2]

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- (ii) The production of fatty acids in Tube 3 did not increase after 20 minutes. Suggest a reason for this. [1]

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- (iii) Apart from fatty acids, name another product of lipid digestion which could have been tested for during this experiment. [1]

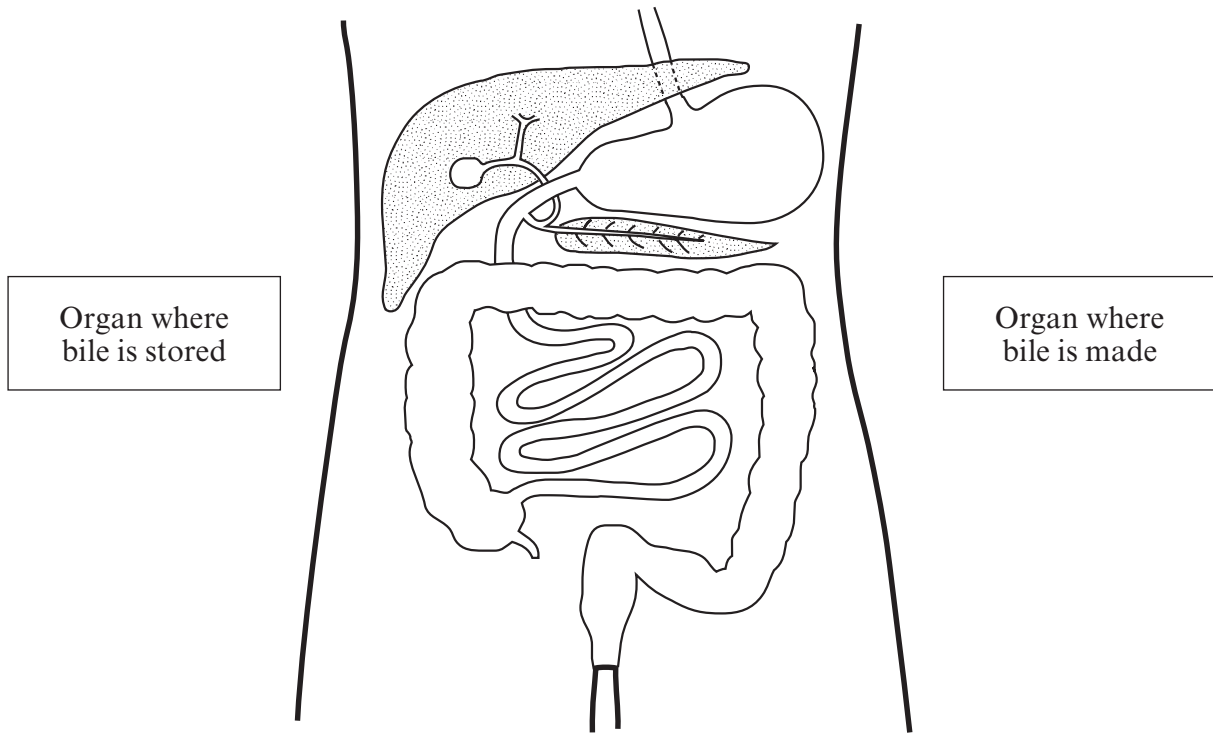
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Question 4.

The diagram below shows part of the digestive system.

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only

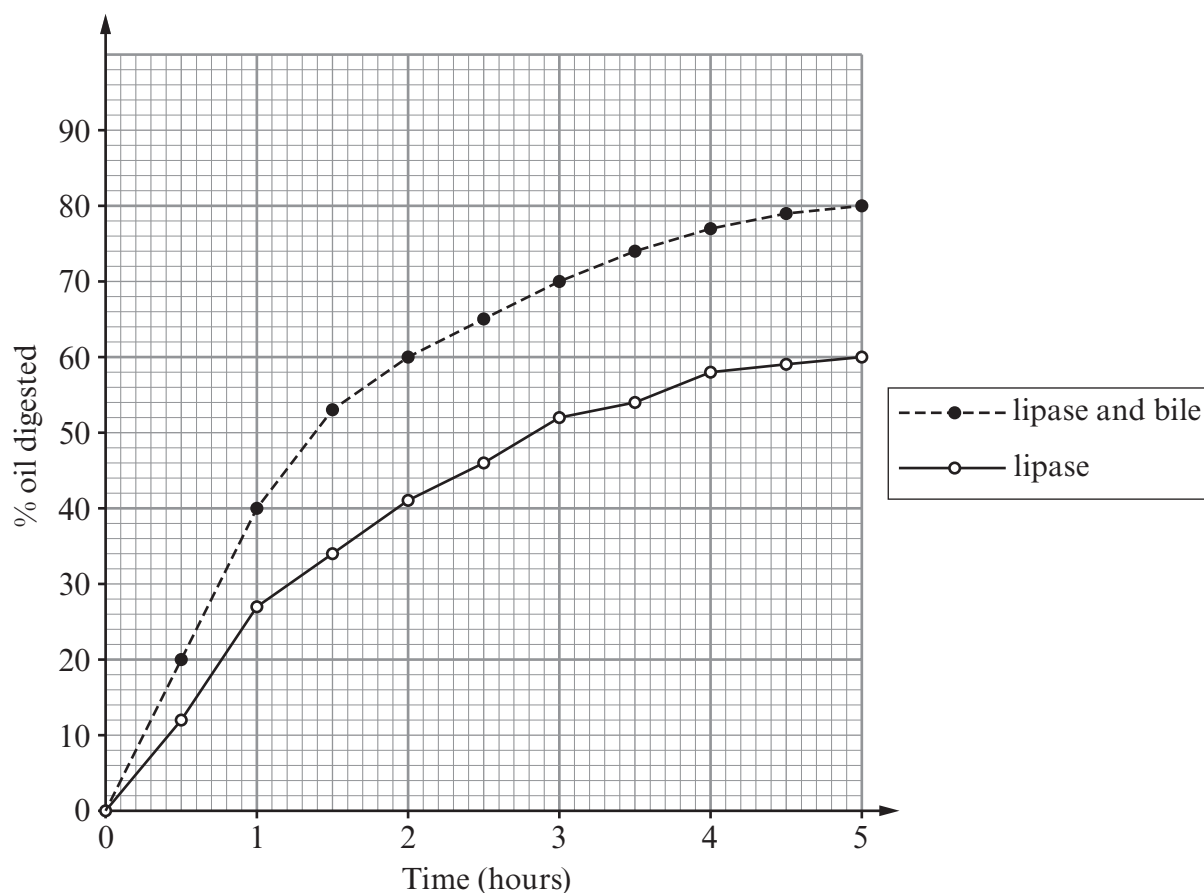


(a) On the diagram above carefully draw an arrow from each box to show the organ where:

(i) bile is made; [1]

(ii) bile is stored. [1]

(b) The graph below shows the digestion of olive oil (fat) by lipase enzyme at pH9 in the presence and absence of bile.



(i) Using only the information in the graph above **describe** the effect of bile on the rate of digestion of olive oil. [1]

(ii) **Explain** the effect of bile on the digestion of olive oil. [2]

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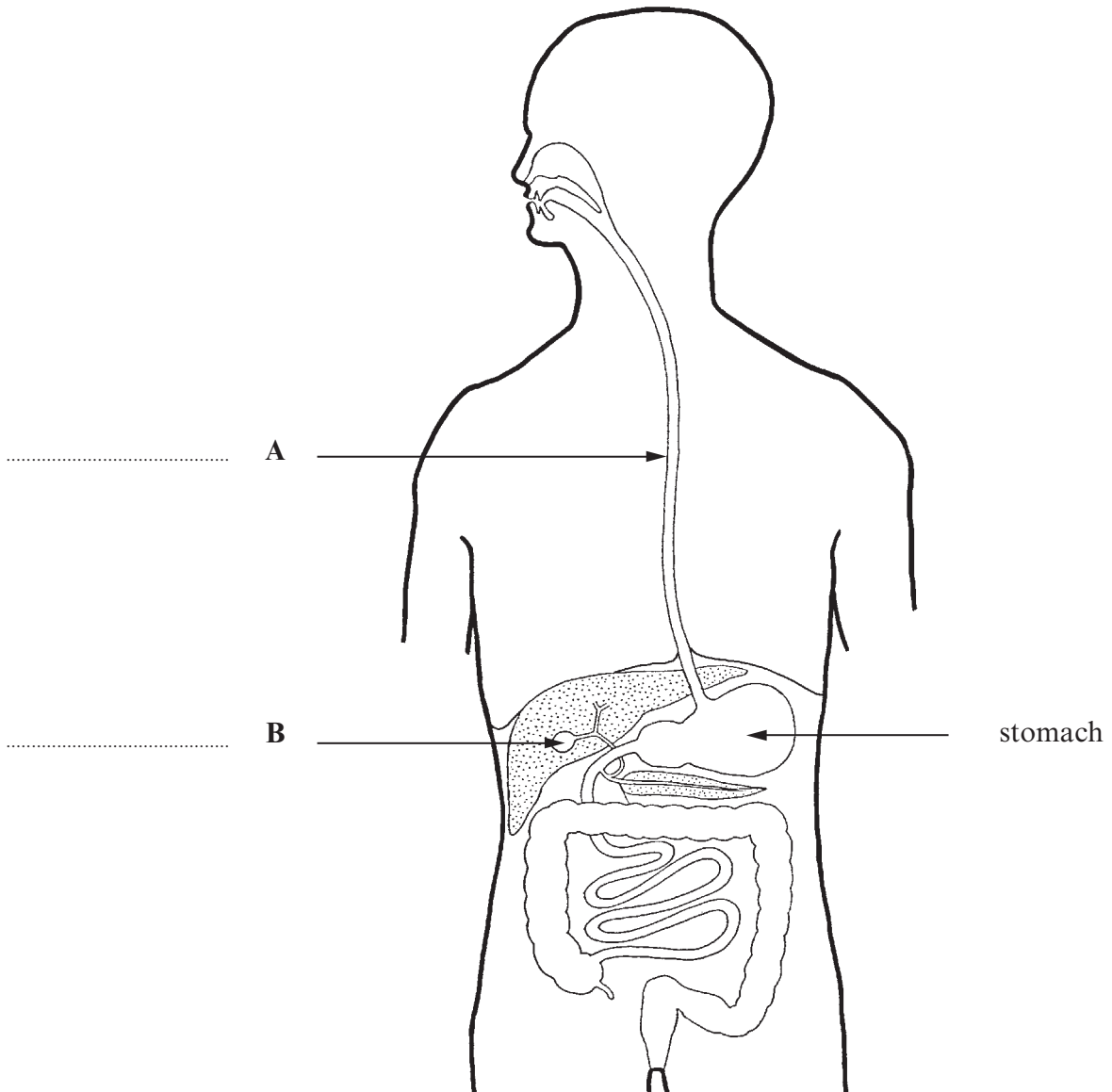
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Question 5.

The diagram below shows the human digestive system.

Examiner
only



(a) Label **A** and **B** on the diagram opposite. [2]

(b) Describe fully the processes involved in the chemical breakdown of food containing **fat** from the time it leaves the stomach. [6 QWC]

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