

The Digestive System

Name: _____

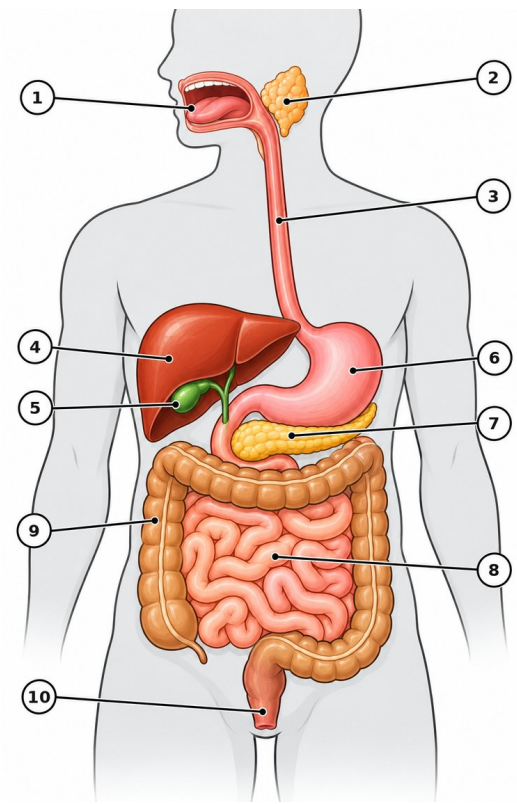
Date: _____ Score: ____ / 23

Key ideas
Path of food: mouth → esophagus → stomach → small intestine → large intestine → rectum. Accessory organs (liver, gallbladder, pancreas) add bile and enzymes but food never passes through them.
Mechanical digestion breaks food into smaller pieces; **chemical digestion** uses enzymes to break large molecules into small ones that can be absorbed.
Enzymes work best at an optimum pH and temperature; extreme conditions **denature** them.

A Label the digestive system

5 marks

Word bank: Esophagus · Gallbladder · Large intestine · Liver · Mouth · Pancreas · Rectum · Salivary gland · Small intestine · Stomach



1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

B The journey of food

4 marks

11. Put the organs in the order food passes through them. (2 marks)

P Small intestine
Q Esophagus
R Mouth

S Large intestine
T Stomach
U Rectum

_____ → _____ → _____ → _____ → _____ → _____

Questions 12–15: is each process mechanical or chemical digestion? ½ mark each.

Process	Mechanical or chemical?
12. Chewing food with the teeth	
13. Amylase breaking starch into maltose	
14. Stomach muscles churning food	
15. Pepsin breaking proteins into peptides	

C Digestive enzymes

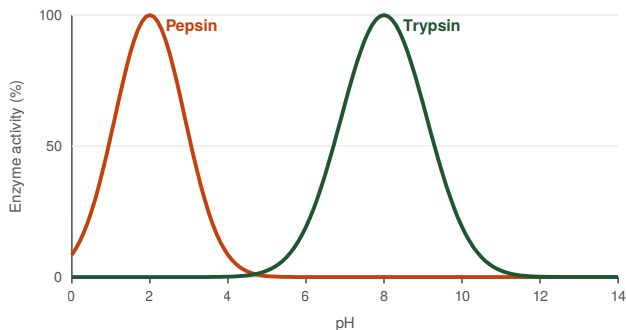
3 marks

Fill in the blank cells (1 mark per row).

	Enzyme	Where it is made	What it digests	Product
16.	Amylase	Salivary glands and pancreas		
17.	Pepsin		Proteins	
18.	Lipase	Pancreas		

D Enzymes and pH

3 marks



19. What is the optimum pH of each enzyme?

20. Pepsin works in the stomach. Use the graph to explain why it is suited to that organ.

21. Why does pepsin stop working when it reaches the small intestine (about pH 8)?

E Food tests

3 marks

Questions 22–25: name the nutrient each test detects and its positive result (½ mark per row).

	Test	Nutrient detected	Positive result
22.	Iodine solution		
23.	Benedict's solution (heated)		
24.	Biuret reagent		
25.	Sudan III		

26. A food sample turns iodine blue-black, stays blue when heated with Benedict's solution, and turns Biuret reagent purple. Which nutrients does it contain?

F Absorption

3 marks

27. Explain how villi help the small intestine absorb nutrients.

28. A smooth section of small intestine would have a surface area of 10 cm². Folds multiply the area by 3, villi by 10 and microvilli by 20. Calculate the actual surface area. (2 marks)

G Spot the mistake

2 marks

29. A student writes: "Digestion starts in the stomach." Explain the error and correct it.

30. A student writes: "Bile is an enzyme that breaks down fats." Explain the error and correct it.

The Digestive System

ANSWER KEY

Key ideas

Path of food: mouth → esophagus → stomach → small intestine → large intestine → rectum. Accessory organs (liver, gallbladder, pancreas) add bile and enzymes but food never passes through them.

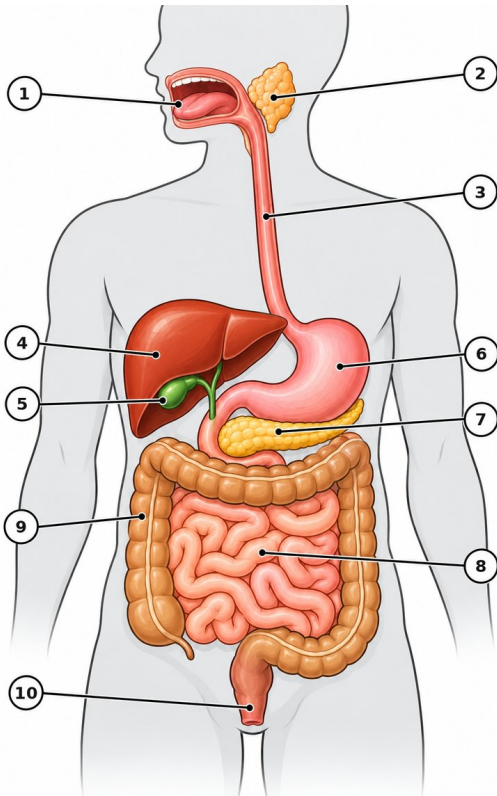
Mechanical digestion breaks food into smaller pieces; **chemical digestion** uses enzymes to break large molecules into small ones that can be absorbed.

Enzymes work best at an optimum pH and temperature; extreme conditions **denature** them.

A Label the digestive system

5 marks

Word bank: Esophagus · Gallbladder · Large intestine · Liver · Mouth · Pancreas · Rectum · Salivary gland · Small intestine · Stomach



1. **Mouth**
2. **Salivary gland**
3. **Esophagus**
4. **Liver**
5. **Gallbladder**
6. **Stomach**
7. **Pancreas**
8. **Small intestine**
9. **Large intestine**
10. **Rectum**

B The journey of food

4 marks

11. Put the organs in the order food passes through them. (2 marks)

P Small intestine

S Large intestine

Q Esophagus

T Stomach

R Mouth

U Rectum

R → **Q** → **T** → **P** → **S** → **U**

Questions 12–15: is each process mechanical or chemical digestion? ½ mark each.

Process	Mechanical or chemical?
12. Chewing food with the teeth	Mechanical
13. Amylase breaking starch into maltose	Chemical
14. Stomach muscles churning food	Mechanical
15. Pepsin breaking proteins into peptides	Chemical

C Digestive enzymes

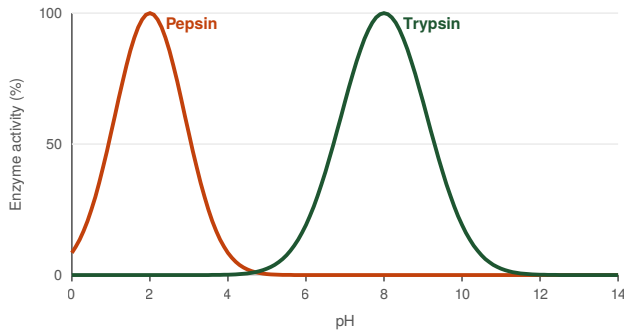
3 marks

Fill in the blank cells (1 mark per row).

	Enzyme	Where it is made	What it digests	Product
16.	Amylase	Salivary glands and pancreas	Starch	Maltose (a sugar)
17.	Pepsin	Stomach	Proteins	Peptides
18.	Lipase	Pancreas	Fats (lipids)	Fatty acids and glycerol

D Enzymes and pH

3 marks



19. What is the optimum pH of each enzyme?

Pepsin: pH 2; trypsin: pH 8

20. Pepsin works in the stomach. Use the graph to explain why it is suited to that organ.

The stomach is very acidic (about pH 2) because of hydrochloric acid, which matches pepsin's optimum.

21. Why does pepsin stop working when it reaches the small intestine (about pH 8)?

The high pH changes the shape of its active site (it is denatured), so it can no longer bind its substrate.

E Food tests

3 marks

Questions 22–25: name the nutrient each test detects and its positive result (½ mark per row).

	Test	Nutrient detected	Positive result
22.	Iodine solution	Starch	Blue-black
23.	Benedict's solution (heated)	Simple sugars (e.g. glucose)	Orange to brick red
24.	Biuret reagent	Protein	Purple
25.	Sudan III	Lipids (fats)	Red-stained oily layer

26. A food sample turns iodine blue-black, stays blue when heated with Benedict's solution, and turns Biuret reagent purple. Which nutrients does it contain?

Starch and protein, but no simple sugars

F Absorption

3 marks

27. Explain how villi help the small intestine absorb nutrients.

They give a huge surface area, have walls only one cell thick, and contain capillaries (and lacteals) to carry nutrients away.

28. A smooth section of small intestine would have a surface area of 10 cm². Folds multiply the area by 3, villi by 10 and microvilli by 20. Calculate the actual surface area. (2 marks)

10 × 3 × 10 × 20 = 6,000 cm² (600 times larger)

G Spot the mistake

2 marks

29. A student writes: "Digestion starts in the stomach." Explain the error and correct it.

Digestion starts in the mouth: teeth break food up (mechanical) and salivary amylase starts digesting starch (chemical).

30. A student writes: "Bile is an enzyme that breaks down fats." Explain the error and correct it.

Bile is not an enzyme. It emulsifies fats into small droplets; the enzyme lipase then digests them.