



CLASS 10 SCIENCE · 2026-27

Life processes

Biology

27

QUESTIONS

30

MINUTES

3

EXERCISES

This belongs to _____ Date _____

WHAT YOU'LL GET GOOD AT

- Names each digestive secretion and states what it acts on
- Explains a structure by the function it serves
- Distinguishes aerobic from anaerobic respiration and their products
- Explains why double circulation is necessary
- Describes how the nephron filters and reabsorbs

Take your time, and have a go at every one. If you get stuck, look at the orange box — Ollie has already done one for you.

Life processes

Biology · 27 questions · tick each box as you finish

Exercise 1 of 3 · 10 questions Name the secretion and say what it does.



WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

Bile is the one worth knowing properly, because the obvious answer is wrong: it contains no enzymes, yet fat digestion cannot proceed without it. It does two things - makes the medium alkaline for the pancreatic enzymes, and emulsifies fat into smaller globules so lipase has more surface to act on. That is a favourite board question precisely because the answer is not what it appears to be.

1) Secreted in the mouth and begins the digestion of starch

2) Makes the stomach contents acidic and kills germs

3) The stomach enzyme that acts on protein

4) Secreted by the liver, containing no enzymes at all

5) Contains trypsin, lipase and amylase

6) The muscular movement that pushes food along the alimentary canal

7) The finger-like projections that absorb digested food

8) The enzyme in pancreatic juice that acts on fats

9) Where most absorption of digested food takes place

10) The part where water is absorbed from undigested food

Exercise 2 of 3 · 10 questions Explain in two or three sentences.

WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

The last answer is the most demanding and shows what a full-mark Class 10 biology answer looks like: it contrasts the two mechanisms, names ATP, and adds the reason the difference matters - phloem transport goes both ways. Answers that only say 'phloem needs energy and xylem does not' have stated the fact without the mechanism, and the mechanism is the mark.

1) Why does the small intestine have villi?**2)** Why is the wall of the left ventricle thicker than that of the right?**3)** Why do we get cramps in our muscles after very heavy exercise?**4)** Why is the rate of breathing much faster in aquatic organisms than in terrestrial ones?**5)** Why does the transport of food in phloem require energy while transport of water in xylem does not?**6)** Why are the walls of the alveoli very thin and richly supplied with blood?**7)** Why is haemoglobin necessary, and what happens when it is deficient?**8)** Why do fish need to pass water continuously over their gills?**9)** Why is translocation in plants a two-way process while water transport is one-way?**10)** Why does the heart have valves?

Exercise 3 of 3 · 7 questions Answer in three or four sentences.

WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

The double circulation answer is a three-mark answer written as three things: what it is, what it achieves, and why that matters. Notice that the last sentence - about maintaining body temperature - is the one that separates a complete answer from a good one. Counting the marks before writing, and then writing that many distinct points, is worth more in this chapter than any additional reading.

1) What is double circulation, and why is it necessary?

2) Describe how urine is formed in the nephron.

3) How do plants get rid of their waste products?

4) Write the products of aerobic respiration and of both kinds of anaerobic respiration.

5) Why is the separation of oxygenated and deoxygenated blood important in birds and mammals?

6) What is the advantage of the alimentary canal being long and coiled?

7) Describe how oxygen reaches a muscle cell from the air.

**All done? How did that feel?**

Colour in a star. Three stars means you could teach it to someone else.



Tricky · Getting there · Easy now



Answer key

For grown-ups

Life processes · keep this page back until your child has finished.

1. Name the secretion and say what it does.

- 1) Saliva, containing salivary amylase, which breaks starch down into simpler sugars.
- 2) Hydrochloric acid. It creates the acidic medium pepsin needs to work, and kills most micro-organisms in the food.
- 3) Pepsin, which acts on proteins and works only in an acidic medium.
- 4) Bile. It makes the medium alkaline for the pancreatic enzymes, and emulsifies fats - breaking large globules into smaller ones so that enzymes can act on them.
- 5) Pancreatic juice, which acts on proteins, fats and carbohydrates respectively.
- 6) Peristalsis. Rhythmic contraction of the walls moves food forward regardless of body position.
- 7) The villi, in the small intestine. They greatly increase the surface area and carry blood vessels to take the food away.
- 8) Lipase. It breaks emulsified fats into fatty acids and glycerol.
- 9) In the small intestine, which is long and lined with villi for exactly that purpose.
- 10) The large intestine. What remains after that is passed out as faeces.

2. Explain in two or three sentences.

- 1) Villi are finger-like projections that greatly increase the surface area available for absorption. They are also richly supplied with blood vessels, so the absorbed food passes straight into the bloodstream.
- 2) Because the left ventricle pumps blood to the whole body and must generate much higher pressure. The right ventricle only sends blood to the nearby lungs, so it needs less force.
- 3) Because the muscles run short of oxygen and switch to anaerobic respiration, which breaks glucose down into lactic acid. The build-up of lactic acid in the muscles causes the cramps.
- 4) Because the amount of dissolved oxygen in water is much lower than the oxygen available in air. Aquatic organisms must therefore pass a far greater volume of water over their gills to obtain the same amount of oxygen.
- 5) Water in the xylem is pulled upwards passively by transpiration pull, which needs no energy from the plant. Food in the phloem is loaded into the sieve tubes using energy from ATP, which raises the osmotic pressure and moves it - and it can travel in either direction, which passive movement could not achieve.
- 6) Because gases have to diffuse across them quickly. A thin wall shortens the distance, and a rich blood supply keeps carrying the oxygen away, which maintains the difference in concentration that drives diffusion.
- 7) Because it binds oxygen and carries it in the blood, which water alone could not do in the amounts needed. Too little of it causes anaemia, so the tissues receive less oxygen and the person tires easily.
- 8) Because water holds far less dissolved oxygen than air. To get enough, a fish must move a large volume of water past its gills continuously.
- 9) Because water moves from the roots upward, driven by transpiration pull, and always in that direction. Food is made in the leaves but is needed everywhere - in growing tips and in storage roots - so it must move both up and down.
- 10) To keep blood flowing in one direction only. Without them blood would flow back when the chambers contract, and no net circulation would result.

3. Answer in three or four sentences.

- 1) Double circulation means the blood passes through the heart twice in one complete circuit of the body - once through the lungs and once through the rest of the body. It is necessary because it keeps oxygenated and deoxygenated blood completely separate, which allows a much more efficient supply of oxygen to the tissues. That efficiency is what makes a high, constant body temperature possible in birds and mammals.
- 2) Blood enters the glomerulus under pressure and is filtered, so water, glucose, salts and urea pass into the tubule while blood cells and proteins remain behind. As the filtrate travels along the tubule, useful substances - glucose, most of the water, and some salts - are selectively reabsorbed into the blood. What remains is urine, which passes to the collecting duct and on to the urinary bladder.
- 3) Plants have no excretory system, so they use several routes. Gaseous wastes leave through the stomata, excess water is lost as vapour by transpiration, and some wastes are stored in leaves that are later shed, or in vacuoles, or released into the soil as resins and gums.
- 4) Aerobic respiration breaks glucose down completely, using oxygen, into carbon dioxide, water and a large amount of energy. Anaerobic respiration in yeast produces ethanol and carbon dioxide with much less energy. Anaerobic respiration in our muscles produces lactic acid, again with much less energy.
- 5) Because they maintain a constant body temperature, which needs a great deal of energy and therefore a great deal of oxygen. Keeping the two kinds of blood apart means the oxygenated blood is not diluted, so the tissues get the most efficient supply.
- 6) It gives a long path and a very large surface area for digestion and absorption without needing a long body. Different regions can also specialise - stomach, small intestine, large intestine - each with its own conditions.
- 7) Air is drawn into the alveoli, where oxygen diffuses across the thin wall into the blood and binds to haemoglobin in the red cells. The blood returns to the heart, is pumped out through the arteries, and at the capillaries the oxygen diffuses out into the muscle cell.

WHILE YOUR CHILD WORKS

- Every answer here needs a name and a function. 'Villi' is half; 'villi, which increase the surface area for absorption' is whole.
- Count the marks before writing. A three-mark question wants three distinct points, not one point at length.
- Diagrams are marked on labels. A rough digestive system with ten labels beats a beautiful one with four.

**Spotted a gap while marking?**

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