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Life Processes — CBSE Class 10 Science Chapter Test

FREE CHAPTER TEST · CLASS X · SCIENCE (086) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	20 (A 10 · B 4 · C 3 · D 1 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 20 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–14 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q15–17 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q18 is a long answer (LA) type question, carrying 5 marks.
7. In Section E, Q19–20 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Science (086) Sample Question Paper 2026-27, at about half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Life Processes · **Topics:** Nutrition in plants and animals · Human digestive system · Respiration · Human respiratory system · Human heart and double circulation · Blood vessels, blood pressure and lymph · Transport in plants · Excretion in humans and plants

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. The enzyme present in saliva that breaks down starch is 1

(A) pepsin (B) trypsin

(C) lipase (D) salivary amylase

2. In yeast, the breakdown of pyruvate in the absence of oxygen gives 1

(A) lactic acid and energy (B) ethanol, carbon dioxide and energy

(C) carbon dioxide, water and energy (D) glucose and oxygen

3. The opening and closing of the stomatal pore is controlled by 1

(A) guard cells (B) root hairs

(C) xylem vessels (D) phloem cells

4. Which blood vessel brings oxygenated blood from the lungs to the heart? 1

(A) Pulmonary artery (B) Vena cava

(C) Pulmonary vein (D) Aorta

5. Bile juice is secreted by the 1

(A) liver (B) pancreas

(C) gall bladder (D) stomach

6. In plants, food made in the leaves is carried to other parts by the 1

(A) xylem (B) root hairs

(C) stomata (D) phloem

7. The basic filtration unit of the human kidney is the 1

(A) neuron (B) nephron

(C) alveolus (D) villus

8. The number of chambers in the heart of a fish is 1

(A) four (B) three

(C) two (D) one

9. **Assertion (A):** Aquatic organisms breathe much faster than terrestrial organisms. 1
Reason (R): The amount of oxygen dissolved in water is fairly low compared with the amount of oxygen in air.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** Arteries have thick, elastic walls. 1

Reason (R): Arteries have valves that stop blood from flowing backwards.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 4 very short answer (VSA) type questions of 2 marks each.

11. (a) Write the overall equation for photosynthesis, and list the three events that occur during the process. 2

OR

(b) How would you show, using a potted plant with variegated leaves (green and white patches), that chlorophyll is needed for photosynthesis?

12. What are the roles of hydrochloric acid and of mucus in the stomach? 2

13. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds? 2

14. How do plants get rid of their waste products? Give four ways. 2

SECTION C

This section comprises 3 short answer (SA) type questions of 3 marks each.

15. (a) Glucose is broken down in three ways in different organisms. (i) What is the first step, common to all, and where does it take place? (ii) What does pyruvate give in the presence of oxygen, and where? (iii) What does it give in our muscle cells when oxygen is short, and what is the effect? 3

OR

(b) (i) What are the two roles of bile in the small intestine? (ii) Name two enzymes in pancreatic juice and the food each acts on. (iii) How is the small intestine designed to absorb digested food?

16. Explain why human circulation is called double circulation. Trace the path of blood from the body through the heart and lungs and back to the body. 3

17. (i) Name the cup-shaped part of a nephron and the cluster of blood capillaries inside it. (ii) Is the filtrate the same as urine? Explain. (iii) What is done for a patient whose kidneys have failed? 3

SECTION D

This section comprises 1 long answer (LA) type questions of 5 marks each.

18. (a) Describe how food is digested in the human alimentary canal, stating the enzyme (or juice) and the product, for: 5

(i) carbohydrates such as starch;

(ii) proteins;

(iii) fats.

(iv) How is digested food absorbed?

(v) What happens in the large intestine?

OR

(b) (i) Describe the path of air from the nostrils to the lungs, and how it is cleaned.

(ii) Why does the air-passage not collapse?

(iii) How are the lungs designed to make gas exchange efficient?

(iv) What happens to the ribs and diaphragm when we breathe in?

(v) How are oxygen and carbon dioxide transported in the blood?

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

19. During a long race, Meera felt painful cramps in her leg muscles. Her coach explained that her muscles had used up the oxygen available and had started releasing energy without enough oxygen.

(i) Name the substance whose build-up in the muscles causes the cramps. [1]

(ii) In which part of the cell is pyruvate broken down when enough oxygen is available? [1]

(iii) Name the energy currency of the cell, and give two examples of activities that use the energy stored in it. [2]

OR

(iii) Compare aerobic respiration in our cells with anaerobic respiration in yeast, giving the products of each and where in the cell the pyruvate is broken down. [2]

20. At a health camp, a doctor measured the blood pressure of a man and recorded it as 120/80 mm of Hg, the normal value. She explained that high blood pressure can damage blood vessels.

(i) Name the instrument used to measure blood pressure. [1]

(ii) What do the two numbers 120 and 80 represent? [1]

(iii) What is high blood pressure called, what causes it, and why is it dangerous? [2]

OR

(iii) How does the body stop bleeding when a blood vessel is cut, and what is the role of lymph? [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(D)	(B)	(A)	(C)	(A)	(D)	(B)	(C)	(A)	(C)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (D). Salivary amylase breaks down starch into simple sugar in the mouth. Pepsin and trypsin digest proteins; lipase digests fats.

Q2. Answer (B). Anaerobic respiration (fermentation) in yeast: pyruvate → ethanol + CO_2 + energy. Lactic acid forms in our muscles when oxygen is short; CO_2 and water form in aerobic respiration.

Q3. Answer (A). When water flows into the guard cells they swell and the pore opens; when they shrink the pore closes.

Q4. Answer (C). The pulmonary vein brings oxygen-rich blood from the lungs to the left atrium. The pulmonary artery takes deoxygenated blood to the lungs; the aorta carries oxygenated blood to the body.

Q5. Answer (A). The liver secretes bile; the gall bladder only stores it.

Q6. Answer (D). Translocation of food (such as sucrose) takes place in the phloem, using energy from ATP. Xylem carries water and minerals.

Q7. Answer (B). Each kidney has large numbers of nephrons, the filtration units. Neurons are nerve cells, alveoli are air sacs of the lungs and villi line the small intestine.

Q8. Answer (C). Fishes have a two-chambered heart; blood is oxygenated in the gills and passes through the heart only once in each cycle.

Q9. Answer (A). Both true, and R explains A: with little oxygen available in water, aquatic animals must breathe faster. Answer (A).

Q10. Answer (C). A is true: arteries carry blood from the heart under high pressure. R is false: valves are found in veins (and the heart), not in arteries. Answer (C).

Q11. (2 marks) Answer: (a) $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$; absorption of light, splitting of water, reduction of CO_2; (b) iodine test on a variegated leaf: only green parts have starch.
(a) $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$ (in the presence of chlorophyll and sunlight). [1]
(1) Absorption of light energy by chlorophyll; (2) conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen; (3) reduction of carbon dioxide to carbohydrates. [1]
OR (b) After the plant is kept in sunlight, the leaf is boiled in alcohol to remove chlorophyll and then treated with iodine solution. [1]
Only the parts that were green turn blue-black (starch is present there), showing that chlorophyll is needed for photosynthesis. [1]

Q12. (2 marks) Answer: HCl gives the acidic medium pepsin needs; mucus protects the stomach lining.
Hydrochloric acid creates an acidic medium, which helps the enzyme pepsin to act on proteins. [1]
Mucus protects the inner lining of the stomach from the action of the acid. [1]

Q13. (2 marks) Answer: Efficient oxygen supply; they need much energy to keep a constant body temperature.
Separating the two sides of the heart prevents oxygenated and deoxygenated blood from mixing, giving a highly efficient supply of oxygen to the body. [1]
Mammals and birds need a lot of energy because they constantly use energy to maintain their body temperature. [1]

Q14. (2 marks) Answer: Gases through stomata, water by transpiration, wastes in falling leaves or vacuoles, resins and gums in old xylem, into soil.
Oxygen and carbon dioxide diffuse out through the stomata; excess water is removed by transpiration. [1]
Many wastes are stored in leaves that fall off or in cellular vacuoles; some are stored as resins and gums in old xylem; some are excreted into the soil around them (any two). [1]

Q15. (3 marks) Answer: (a) glucose → pyruvate in cytoplasm; CO_2 + water in mitochondria; lactic acid, cramps; (b) bile alkaline and emulsifies; trypsin, lipase; villi increase surface area.
(a) (i) Glucose (a six-carbon molecule) is broken down into pyruvate (a three-carbon molecule) in the cytoplasm. [1]
(ii) In mitochondria, with oxygen, pyruvate is broken down into carbon dioxide and water, releasing much more energy (aerobic respiration). [1]
(iii) Lactic acid (a three-carbon molecule) and energy; its build-up causes muscle cramps. [1]
OR (b) (i) Bile from the liver makes the food alkaline (so that pancreatic enzymes can act) and breaks large fat globules into smaller ones (emulsification). [1]
(ii) Pancreatic juice contains trypsin, which digests proteins, and lipase, which breaks down emulsified fats. [1]
(iii) The wall of the small intestine has villi, finger-like projections that greatly increase the surface area for absorption; they have many blood vessels that carry the absorbed food to every cell. [1]

Q16. (3 marks) Answer: Through the heart twice per cycle; body → right atrium → right ventricle → lungs → left atrium → left ventricle → body.
Blood passes through the heart twice in each complete cycle of the body: once for the lungs and once for the rest of the body. [1]
Deoxygenated blood from the body enters the right atrium (through the vena cava), passes to the right ventricle and is pumped to the lungs (pulmonary artery). [1]
Oxygenated blood returns to the left atrium (pulmonary vein), passes to the left ventricle and is pumped to the body (aorta). [1]

Q17. (3 marks) Answer: (i) Bowman's capsule, glomerulus; (ii) no, useful substances and water are re-absorbed; (iii) dialysis.
(i) Bowman's capsule; glomerulus. [1]
(ii) No: as the filtrate passes along the tubule, useful substances such as glucose, amino acids, salts and a major amount of water are selectively re-absorbed; what is left is urine. [1]
(iii) Dialysis using an artificial kidney: the blood is passed through long tubes in a tank of dialysing fluid, which removes nitrogenous wastes, and the purified blood is returned to the patient. [1]

Q18. (5 marks) Answer: (a) amylase → sugar, then glucose; pepsin, trypsin → amino acids; bile, lipase → fatty acids and glycerol; villi; water absorbed in the large intestine; (b) nostrils filter; cartilage rings; alveoli; diaphragm and ribs; haemoglobin.

(a) (i) Salivary amylase in the mouth breaks starch into sugar; intestinal juice finally converts carbohydrates into glucose. [1]

(ii) Pepsin in the stomach (in the acidic medium given by HCl) and trypsin from the pancreas digest proteins; intestinal juice finally converts them into amino acids. [1]

(iii) Bile salts emulsify fats; lipase from the pancreas breaks them down; the final products are fatty acids and glycerol. [1]

(iv) The villi of the small intestine absorb the digested food into the blood vessels, which take it to every cell. [1]

(v) The large intestine absorbs more water from the unabsorbed food; the rest is removed through the anus, controlled by the anal sphincter. [1]

OR (b) (i) Air is taken in through the nostrils, where fine hairs and mucus filter it, then passes through the throat into the lungs. [1]

(ii) Rings of cartilage in the throat ensure that the air-passage does not collapse. [1]

(iii) In the lungs the passage divides into smaller and smaller tubes ending in balloon-like alveoli, which give a large surface for gas exchange and have an extensive network of blood vessels. [1]

(iv) When we breathe in, the ribs are lifted and the diaphragm flattens, so the chest cavity becomes larger and air is sucked into the lungs. [1]

(v) Haemoglobin, the respiratory pigment in red blood cells, has a very high affinity for oxygen and carries it to the tissues; carbon dioxide, more soluble in water, is mostly carried dissolved in blood. [1]

Q19. (4 marks) Answer: (i) lactic acid; (ii) mitochondria; (iii)(a) ATP; muscle contraction, protein making, nerve impulses; (b) CO_2 + water in mitochondria vs ethanol + CO_2 without oxygen.

(i) Lactic acid. [1]

(ii) Mitochondria. [1]

(iii)(a) ATP (adenosine triphosphate). [1]

Any two: contraction of muscles, making proteins, conduction of nerve impulses. [1]

OR (iii)(b) Aerobic: pyruvate is broken down in the mitochondria into carbon dioxide and water, releasing much energy. [1]

Anaerobic in yeast: pyruvate is broken down in the cytoplasm, without oxygen, into ethanol and carbon dioxide, releasing much less energy. [1]

Q20. (4 marks) Answer: (i) sphygmomanometer; (ii) systolic and diastolic pressure; (iii)(a) hypertension, constricted arterioles, artery may rupture; (b) platelets clot the blood; lymph carries fat and drains extra fluid.

(i) Sphygmomanometer. [1]

(ii) 120 mm of Hg is the systolic pressure (when the ventricles contract); 80 mm of Hg is the diastolic pressure (when they relax). [1]

(iii)(a) Hypertension; it is caused by the constriction of arterioles, which increases the resistance to blood flow. [1]

It can lead to the rupture of an artery and internal bleeding. [1]

OR (iii)(b) Platelets circulate in the blood and plug the leak by helping the blood to clot at the injury. [1]

Lymph carries digested and absorbed fat from the intestine and drains excess fluid from the spaces between cells back into the blood. [1]

All questions are original and © Master Testing Agency. Free to download and use for personal practice; not for resale. Every answer in this paper was checked against the NCERT Class 10 Science textbook, and by computer where possible: the photosynthesis and respiration equations balanced by counting atoms, and carbon atoms followed through each pathway.