CLASS 10 SCIENCE NCERT SOLUTIONS

NCERT Solutions for Class 10 Science Chapter 5: Life Processes – Free PDF Download

Chapter 5 — Life Processes covers nutrition, respiration, transportation and excretion in the current 2026-27 CBSE Class 10 Science syllabus (this chapter shifted from Chapter 6 to Chapter 5 after the 2023 rationalisation, when Periodic Classification of Elements (previously Chapter 5) was removed from the syllabu...

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NCERT Solutions for Class 10 Science Chapter 5: Life Processes

Q1. The kidneys in human beings are a part of the system for (a) nutrition (b) respiration (c) excretion (d) transportation.
Answer: **(c) excretion.**

Q2. The xylem in plants are responsible for (a) transport of water (b) transport of food (c) transport of amino acids (d) transport of oxygen.
Answer: **(a) transport of water** (and dissolved minerals).

Q3. The autotrophic mode of nutrition requires (a) carbon dioxide and water (b) chlorophyll (c) sunlight (d) all of the above.
Answer: **(d) all of the above** — carbon dioxide, water, chlorophyll and sunlight are all necessary for photosynthesis.

Q4. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in (a) cytoplasm (b) mitochondria (c) chloroplast (d) nucleus.
Answer: **(b) mitochondria.**

Q5. How are fats digested in our bodies? Where does this process take place?
Fat digestion mainly happens in the **small intestine.** Bile salts (from the liver, stored in the gallbladder) emulsify large fat globules into tiny droplets, greatly increasing their surface area. Pancreatic lipase, secreted by the pancreas, then acts on these emulsified fat droplets, breaking them down into fatty acids and glycerol.

Q6. What is the role of saliva in the digestion of food?
Saliva, secreted by the salivary glands, moistens food for easier chewing and swallowing. It also contains the enzyme **salivary amylase**, which begins breaking down starch into simpler sugars (maltose) right in the mouth.

Q7. What are the necessary conditions for autotrophic nutrition, and what are its by-products?
Necessary conditions: **sunlight, chlorophyll, carbon dioxide (from air, via stomata)** and **water (from soil, via roots).** The main product is glucose (food, later stored as starch); **oxygen** is released as a by-product of this process (photosynthesis).

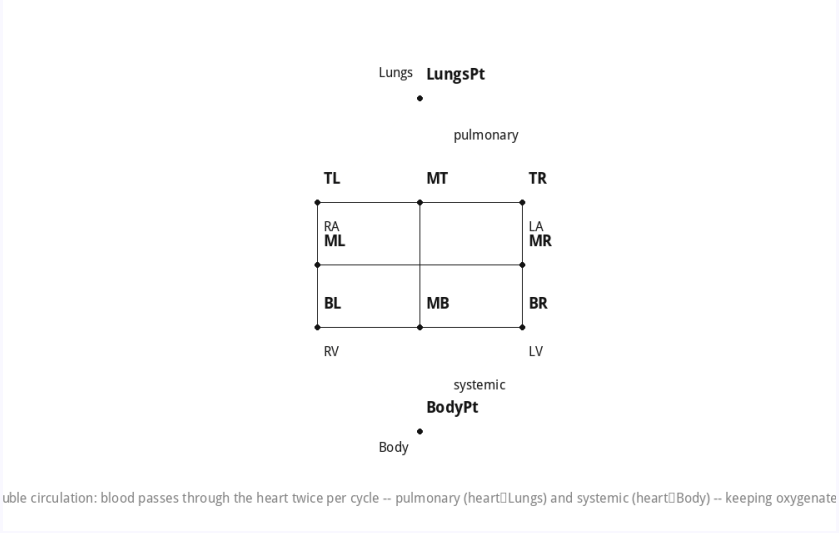
Q8. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration.
Aerobic respiration: occurs in the presence of oxygen, takes place in the mitochondria, completely breaks down glucose into carbon dioxide and water, and releases a large amount of energy.
Anaerobic respiration: occurs in the absence of oxygen, takes place in the cytoplasm, only partially breaks down glucose (into ethanol and CO_2 in yeast, or into lactic acid in muscle cells), and releases much less energy.
Organisms using anaerobic respiration: **yeast** (alcoholic fermentation) and several bacteria; human muscle

cells also switch to anaerobic respiration temporarily during vigorous exercise.

Q9. How are the alveoli designed to maximise the exchange of gases?
The lungs contain millions of tiny balloon-like alveoli, giving an enormously large total surface area. Their walls are only one cell thick, and they are surrounded by an extensive network of blood capillaries — this combination of large surface area, thin walls and rich blood supply minimises the diffusion distance and maximises the rate of gas exchange between air and blood.

Q10. What would be the consequences of a deficiency of haemoglobin in our bodies?
Haemoglobin carries oxygen from the lungs to body tissues. A deficiency (anaemia) reduces the blood's oxygen-carrying capacity, so tissues and cells receive less oxygen than they need — leading to weakness, fatigue, breathlessness on exertion, and reduced energy (ATP) production in cells.

Q11. Describe double circulation of blood in human beings. Why is it necessary?



Double circulation: blood passes through the heart twice per cycle -- pulmonary (heart⇌Lungs) and systemic (heart⇌Body) -- keeping oxygenated/deoxygenated blood separate.

In double circulation, blood passes through the heart **twice** in one complete cycle: in **pulmonary circulation**, deoxygenated blood travels from the body to the right side of the heart, then to the lungs to pick up oxygen; in **systemic circulation**, this oxygenated blood returns to the left side of the heart and is then pumped out to the rest of the body. It is necessary because it keeps oxygenated and deoxygenated blood almost completely separate (via a four-chambered heart), allowing highly efficient oxygen delivery — essential for warm-blooded organisms with high, constant energy demands.

Q12. What are the differences between the transport of materials in xylem and phloem?
Xylem: transports water and minerals; movement is one-directional (upward, from roots to leaves); made of dead, non-living conducting cells (tracheids and vessels); driven mainly by the passive process of transpiration pull, needing very little energy from the plant.
Phloem: transports food (mainly sucrose); movement can be in either direction (source to sink, wherever needed); made of living cells (sieve tubes with companion cells); requires the plant to spend energy (ATP) to actively load sucrose into the sieve tubes, after which water follows by osmosis to generate the pressure that pushes the sap along.

Q13. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.
Both are the **basic functional units** of their organs, present in millions, and both are structurally optimised

to maximise surface area for their job — thin walls and a rich surrounding blood supply. **Alveoli** carry out gas exchange (oxygen in, carbon dioxide out) by simple diffusion between air and blood. **Nephrons** carry out the more complex job of filtering blood (at the glomerulus) and then selectively reabsorbing useful substances and secreting wastes along the tubule, ultimately producing urine. So while both maximise surface area and blood supply in a similar way, alveoli perform simple gas diffusion while nephrons perform active filtration plus selective reabsorption/secretion.

Why This Chapter Matters for Boards

Life Processes is one of the most consistently tested biology chapters in the CBSE Class 10 board paper — diagram-based questions (human digestive/respiratory/circulatory/excretory systems) and short-answer comparisons (aerobic vs anaerobic, xylem vs phloem) appear almost every year. A solid grasp of this chapter also underpins Chapter 6 (Control and Coordination) and Chapter 8 (Heredity), which build on the same organ-system reasoning.

CBSE Exam Weightage

This chapter falls under **Unit II: World of Living** in the CBSE Class 10 Science board exam syllabus. This unit typically carries around **25 marks (31.25%)** of the 80-mark theory paper, based on CBSE's published unit-wise weightage (Question Paper Design). CBSE sets weightage at the unit level rather than chapter-by-chapter, so the exact share from this specific chapter can vary a little between years and sample papers.

Class 10 Science Chapter 5 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the Class 10 Science Chapter 5 Extra Questions and Class 10 Science Chapter 5 Revision Notes for quick revision and extra practice.