

Lesson Plan: Life Processes (CBSE Class X 2026-27)

Teacher:

Class: X

Subject: Science (Subject Code - 086)

Unit II: World of Living (Unit Weightage: 25 Marks)

Chapter: 5 – Life Processes

Estimated Number of Periods: 14

1. Gist of the Lesson & Curricular Goals

- **Core Syllabus:** Concept of "Living Being" and the basic concepts of nutrition, respiration, transport, and excretion in plants and animals.
- **Educational Aim:** To encourage curiosity and connection with the real world, nurturing responsible and critically thinking citizens by developing capacities for scientific inquiry and observation.

2. Teaching-Learning Plan & Pedagogy

Key Concepts	Competencies (C) & Learning Outcomes	Teaching-Learning Activities (Pedagogy)	Assessment Strategies
Living Beings & Nutrition	C-3.2: Analyses similarities and differences in life processes involved in nutrition (photosynthesis; digestion). • <i>Outcome:</i> Students	• Mandatory Practical (Exp 6): Preparing a temporary mount of a leaf peel to show stomata. • Flowcharting: Map the continuous pathway of digestion	• [Demonstrate Knowledge - VSA]: <i>Define</i> autotrophic nutrition. • [Application - SA]: <i>Explain</i> the role of hydrochloric acid in the human stomach.

	will map the human alimentary canal and explain autotrophic/heterotrophic nutrition.	from the mouth to the anus, detailing the role of specific enzymes (e.g., pepsin, amylase).	
Respiration	<p>C-3.2: Analyses exchange of materials (respiration).</p> <p>C-8.2: Designs and implements a plan for scientific inquiry.</p>	<p>• Mandatory Practical (Exp 7): Experimentally show that carbon dioxide is given out during respiration.</p> <p>• Concept Mapping: Draw the three pathways of glucose breakdown (presence, absence, and lack of oxygen).</p>	<p>• [Application - LA]: <i>Distinguish</i> between aerobic and anaerobic respiration.</p> <p>• [Formulate & Analyze - Case-Based]: <i>Examine</i> the causes of muscle cramps in athletes during heavy physical exercise.</p>
Transport in Humans	<p>C-3.2: Analyses transport (circulation in animals).</p> <p>• <i>Outcome:</i> Students will trace the double circulation of blood and identify the functions of blood vessels.</p>	<p>• Visual Tracing: Use red and blue markers on the board to trace the flow of oxygenated and deoxygenated blood through the four chambers of the human heart and the lungs.</p> <p>• Discussion: Connect blood pressure measurements (systolic/diastolic) to ventricular contraction and relaxation.</p>	<p>• [Demonstrate Knowledge - Objective]: <i>Name</i> the blood vessel that carries oxygenated blood from the lungs to the heart.</p> <p>• [Analyze & Evaluate - Assertion-Reasoning]: <i>Evaluate</i> why ventricles have thicker muscular walls than atria.</p>

<p>Transport in Plants</p>	<p>C-3.2: Analyses transport (transport of water in plants).</p> <p>• <i>Outcome:</i> Students will differentiate between the roles of xylem and phloem.</p>	<p>• Compare & Contrast: Create a T-chart differentiating the unidirectional transport of water and minerals (xylem) driven by transpiration pull, versus the bidirectional translocation of food (phloem).</p>	<p>• [Demonstrate Knowledge - VSA]: <i>Define</i> transpiration.</p> <p>• [Application - SA]: <i>Illustrate</i> how the transpiration pull helps in the upward movement of water.</p>
<p>Excretion</p>	<p>C-3.2: Analyses exchange of materials (excretion).</p> <p>• <i>Outcome:</i> Students will describe the structure of a nephron and methods of waste removal.</p>	<p>• Step-by-Step Drawing: Teacher draws a nephron on the board, explaining the processes of ultrafiltration and selective reabsorption.</p> <p>• Brainstorming: Discuss how plants excrete waste products like oxygen, resins, gums, and falling leaves.</p>	<p>• [Application - LA]: <i>Describe</i> the structure and functioning of nephrons.</p> <p>• [Formulate & Analyze - SA]: <i>Compare</i> the functioning of an artificial kidney (hemodialysis) with a natural kidney.</p>

3. Assessment Structure & Weightage

Assessments are strictly modeled on the CBSE 2026-27 Theory Question Paper Design (80 marks) :

- **Demonstrate Knowledge and Understanding (50%):** Assessed via questions asking students to *state, name, list, identify, define, suggest, describe, outline, and summarize* (e.g., naming heart chambers, defining transpiration).
- **Application of Knowledge/Concepts (30%):** Assessed via questions asking students to

calculate, illustrate, show, adapt, explain, and distinguish (e.g., explaining enzyme functions, distinguishing respiration types).

- **Formulate, Analyze, Evaluate and Create (20%):** Assessed via questions asking students to *interpret, analyze, compare, contrast, examine, evaluate, discuss, and construct* (e.g., evaluating experimental data, comparing plant and animal transport).

4. Digital Integration & Portfolio Enrichment (Internal Assessment - 20 Marks)

- **Subject Enrichment (Practical Work - 5 Marks):** Evaluated strictly on the execution of Experiment 6 (Stomata mount) and Experiment 7 (CO₂ during respiration). Students will be assessed on their accurate use of microscopes, handling of biological samples, and the quality of their observational diagrams in the lab record.
- **Digital Integration Strategy:** To reinforce spatial understanding ahead of Periodic Assessments (5+5 Marks), utilize 3D biological simulators (e.g., from the DIKSHA portal) to allow students to digitally dissect the human heart and view the synchronized pumping action of the atria and ventricles.
- **Portfolio Task (5 Marks):** Students will *investigate* their own resting heart rate and their heart rate immediately following 2 minutes of moderate exercise (like jumping jacks). They will prepare a brief write-up displaying their collected data in a table, accompanied by a scientific explanation connecting their findings to cellular respiration and oxygen demand, securely adding this to their academic portfolio.