Lesson Plan: Cell (CBSE Class IX 2026-27)

Teacher:

Class: IX

Subject: Science (Subject Code - 086)

Theme/Unit: Structure and Function of the Living World

Chapter: Cell

Estimated Number of Periods: 12

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1. Gist of the Lesson & Curricular Goals

- **Core Syllabus:** Discovery of cell; Plant and animal cells; Prokaryotic and eukaryotic cells; Cell as a structural and functional unit of life; Structure and function of key organelles (nucleus, mitochondria, chloroplast, endoplasmic reticulum, vacuoles, plasma membrane, cell wall); Permeability of cell membranes; Diffusion and osmosis; Cellular division and cancer; Recent advancement in cell biology.

- **Educational Aim:** To explore the structure and function of the living world at the cellular level (CG-3) , encouraging curiosity, creativity, collaboration, and connection with the real world to nurture informed and critically thinking citizens.

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2. Teaching-Learning Plan & Pedagogy

Key Concepts	Competencies (C) & Learning Outcomes	Teaching-Learning Activities (Pedagogy)	Assessment Strategies
Introduction to Cell & Types	**C-3.1:** Explains the role of cellular components. **C-7.1:** Recognises cell as the	• **Visual Observation:** Observe pre-prepared slides of onion peel (plant) and human cheek cells (animal) under a	• **[Demonstrate Knowledge - VSA]:** *Define* a prokaryotic cell. • **[Application - SA]:** *Distinguish* between

	structural/functional unit. • *Outcome:* Students will differentiate between plant/animal cells and prokaryotes/eukaryotes.	microscope. • **Discussion:** Pose questions such as: *Can we create an artificial cell which behaves exactly like a natural living cell?*	plant and animal cells with the help of a diagram.
Cell Organelles & Biomolecules	**C-3.1 & C-4.2:** Identifies the role of biomolecules and structural features. **C-6.1:** Appreciates Indian contributions. • *Outcome:* Students will describe the structure and function of key organelles.	• **Model Making:** Exhibit creativity by designing models of cell organelles using low-cost or no-cost eco-friendly materials . • **Contextual Learning:** Discuss the significant contributions of India, such as Professor Arun Kumar Sharma's work on chromosomes.	• **[Demonstrate Knowledge - Objective]:** *Identify* the organelle known as the powerhouse of the cell. • **[Formulate & Analyze - SA]:** *Examine* the role of the semi-permeable cell membrane in making the cell the functional basis of life processes.
Membrane Permeability (Osmosis & Diffusion)	**C-3.2:** Explains activities inside the cell and environment interactions. **C-8.2:** Designs and implements a plan for scientific inquiry.	• **Scientific Inquiry (Experiment):** Carry out an experiment to understand osmosis (e.g., the raisin or egg osmosis experiment). • **Data Analysis:** Analyze results, represent findings in	• **[Application - LA]:** *Explain* the difference between diffusion and osmosis with real-life examples. • **[Analyze & Evaluate - Case-Based]:** *Interpret* the changes in the mass of a potato

	• *Outcome:* Students will differentiate between diffusion and osmosis and demonstrate osmosis in cells.	tables/graphs, and communicate inferences using scientific terms.	slice placed in a hypertonic salt solution.
Cell Division & Disease	**C-3.3:** Describes mechanisms of heredity and variation. **C-5.2:** Examines a case study related to Science in human life. • *Outcome:* Students will explain the role of mitosis and meiosis.	• **Flowcharting:** Map the difference between somatic cell division (mitosis) and reproductive cell division (meiosis). • **Case Study:** Discuss real-life medical applications, citing case studies such as Leigh Syndrome, mitochondrial dysfunction, or the uncontrolled cell division seen in cancer.	• **[Demonstrate Knowledge - VSA]:** *State* the type of cell division responsible for growth and repair. • **[Application - SA]:** *Explain* how meiosis is essential for maintaining chromosome numbers during reproduction.

3. Assessment Structure & Weightage

Assessments are modeled on the standard CBSE 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., stating functions of the nucleus, defining osmosis).
- **Application of Knowledge/Concepts (30%):** Assessed via questions asking students to *calculate, illustrate, show, adapt, explain, and distinguish* (e.g., explaining cell division, distinguishing prokaryotes and eukaryotes).
- **Formulate, Analyze, Evaluate and Create (20%):** Assessed via questions asking students to *interpret, analyze, compare, contrast, examine, evaluate, discuss, and construct* (e.g., analyzing osmosis experiment results, evaluating case studies on cellular

dysfunction).

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

- **Subject Enrichment (Practical Work - 5 Marks):** Evaluated strictly on the execution of the osmosis experiment. Students will formulate hypotheses, accurately use scientific instruments to collect data, and represent their findings in multiple modes (tables or graphs) within their practical records.

- **Digital Integration Strategy:** To reinforce spatial understanding of microscopic structures ahead of Periodic Assessments, utilize interactive 3D cell models (e.g., through DIKSHA or similar platforms) where students can digitally navigate inside a eukaryotic cell to explore the endoplasmic reticulum and Golgi apparatus.
- **Portfolio Task (5 Marks):** Students will *construct* an accurate, appropriate model of a plant or animal cell using low-cost or no-cost eco-friendly materials. They will prepare a brief write-up identifying the role of each biomolecule and organelle, securely adding photographic evidence of their model and the write-up to their academic portfolio.