Lesson Plan: Patterns in Life: Diversity and Classification (CBSE Class IX 2026-27)

Teacher:

Class: IX

Subject: Science (Subject Code - 086)

Theme/Unit: Diversity in the Living World

Chapter: 12 – Patterns in Life: Diversity and Classification

Estimated Number of Periods: 12

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1. Gist of the Lesson & Curricular Goals

- **Core Syllabus:** Five kingdoms and their key features with examples; Importance of classification; Major divisions of animals and plants; Binomial nomenclature; Acellular entities: viruses.

- **Educational Aim:** To understand the ecological roles of diverse organisms and classify them into five kingdoms based on cellular organization (CG-4), while appreciating the evolution of scientific knowledge and binomial nomenclature.

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2. Teaching-Learning Plan & Pedagogy

Key Concepts	Competencies (C) & Learning Outcomes	Teaching-Learning Activities (Pedagogy)	Assessment Strategies
Biodiversity & Need for Classification	**C-4.1:** Distinguishes organisms based on characteristics. • *Outcome:* Students will explain biodiversity and group organisms by habitat or habits.	• **Visual Observation (Activity 12.1):** Observe a picture of an ecosystem and classify animals based on active time (day/night) or diet (carnivore/herbivor	• **[Demonstrate Knowledge - VSA]:** *Define* biodiversity and state one reason why classification is necessary. • **[Formulate &**

		e) to show different grouping criteria. • **Case Study:** Discuss the Pakke Tiger Reserve and its hornbill species to illustrate why a formal, universal classification system is necessary.	**Analyze - SA]:** *Examine* why Aristotle's early classification system based solely on habitat (land/water/air) caused confusion.
Five Kingdom Classification	**C-4.1:** Classifies organisms into five kingdoms. • *Outcome:* Students will list the criteria for Whittaker's Five Kingdom Classification.	• **Concept Mapping:** Study and draw the flow chart (Fig. 12.5) separating organisms based on cell type (prokaryote/eukaryote), body organization (unicellular/multicellular), and mode of nutrition. • **Microscopic Observation:** Observe permanent slides of bacteria (Monera) and prepare a hay infusion to observe live protists (Amoeba/Paramecium).	• **[Demonstrate Knowledge - SA]:** *List* three criteria used by Robert H. Whittaker to classify organisms. • **[Application - LA]:** *Explain* the difference between Kingdom Monera and Kingdom Protista.

Kingdom Plantae	**C-4.1:** Distinguishes major divisions of plants. • *Outcome:* Students will categorize plants from Thallophyta to Angiosperms.	• **Compare & Contrast (Activity 12.9):** Chart the evolutionary progression of plants (Thallophyta $\rightarrow$ Bryophyta $\rightarrow$ Pteridophyta $\rightarrow$ Gymnosperm $\rightarrow$ Angiosperm) based on roots, vascular tissue, and seeds. • **Observation:** Observe a fern stem cross-section under a microscope to identify xylem and phloem (vascular tissue).	• **[Application - SA]:** *Distinguish* between Bryophytes and Pteridophytes regarding vascular tissue. • **[Analyze & Evaluate - Assertion-Reasoning]:** *Evaluate* why Bryophytes are called the amphibians of the plant kingdom.
Kingdom Animalia	**C-4.1:** Distinguishes major divisions of animals. • *Outcome:* Students will classify invertebrates and vertebrates.	• **Visual Mapping:** Use images to trace the evolution of animal body plans: cellular (Porifera), tissue (Cnidaria), organ (Platyhelminthes), and organ system (Nematoda to Chordata). • **Discussion:** Discuss how the	• **[Demonstrate Knowledge - Objective]:** *Identify* the phylum that possesses a hard external skeleton and jointed legs. • **[Formulate & Analyze - Case-Based]:** *Interpret* why flatworms have a single opening for

		development of a notochord separates Invertebrates from Chordates.	food and waste compared to the two openings in roundworms.
Binomial Nomenclature & Acellular Entities	**C-4.1:** Applies binomial nomenclature to common organisms. • *Outcome:* Students will write scientific names correctly and explain why viruses are excluded.	• **Rule Application:** Teach the rules of Linnaeus's binomial nomenclature (Genus capitalized, species lowercase, italicized/underlined). • **Contextual Learning:** Discuss why viruses are considered "acellular" and do not fit into the five-kingdom system.	• **[Demonstrate Knowledge - VSA]:** *Write* the correct scientific name format for a tiger. • **[Application - SA]:** *Explain* why viruses are not placed in any of the five kingdoms.

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., listing the five kingdoms, naming the father of modern taxonomy).

- **Application of Knowledge/Concepts (30%):** Assessed via questions asking students to *calculate, illustrate, show, adapt, explain, and distinguish* (e.g., distinguishing between prokaryotes and eukaryotes, explaining binomial nomenclature rules).

- **Formulate, Analyze, Evaluate and Create (20%):** Assessed via questions asking students to *interpret, analyze, compare, contrast, examine, evaluate, discuss, and*

construct (e.g., analyzing evolutionary traits in plant divisions, evaluating the placement of fungi).

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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 hay infusion experiment to observe Protista (Activity 12.5) and the microscopic observation of the fern stem (Pteridophyta). Students will be assessed on their slide preparation skills, focusing ability on the microscope, and biological drawings in their practical records.

- **Digital Integration Strategy:** To reinforce biological classification ahead of Periodic Assessments, utilize digital phylogenetic tree simulators (e.g., via the DIKSHA portal or similar interactive tools). Students can digitally explore how Carl Woese's Three-Domain System separates Bacteria, Archaea, and Eukarya based on DNA similarities rather than just physical traits.

- **Portfolio Task (5 Marks):** Students will *investigate* local biodiversity. They will visit a nearby park or garden, identify at least five different plants and five different animals, and classify them down to their respective Phylum/Division using the criteria learned in class. They must research and write the correct Binomial Nomenclature for three of these organisms and securely add this field report to their academic portfolio.