VIDYARTHI VIGYAN MANTHAN 2025-26
SYLLABUS (CLASS - VIII)

CLASS VIII

PHYSICS

1. **Idea of Force:** Idea of force-push or pull; change in speed, direction of moving objects and shape of objects by applying force; contact and non-contact forces. Observing and analysing the relation between force and motion in a variety of daily-life situations. Demonstrating change in speed of a moving object, its direction of motion and shape by applying force. Measuring the weight of an object, as a force (pull) by the Earth using a spring balance.

2. **Friction:** factors affecting friction, sliding and rolling friction, moving; advantages and disadvantages of friction for the movement of automobiles, aeroplanes and boats/ships; increasing and reducing friction. Demonstrating friction between rough/smooth surfaces of moving objects in contact, and wear and tear of moving objects by rubbing (eraser on paper, cardboard, sandpaper). Activities on static, sliding and rolling friction. Studying ball bearings. Discussion on other methods of reducing friction and ways of increasing friction.

3. **Pressure:** Idea of pressure; pressure exerted by air/liquid; atmospheric pressure. Observing the dependence of pressure exerted by a force on the surface area of an object. Demonstrating that air exerts pressure in a variety of situations. Demonstrating that liquids exert pressure. Designing an improvised manometer and measuring the pressure exerted by liquids. Designing an improvised pressure detector and demonstrating an increase in pressure exerted by a liquid at greater depths.

4. **Sound:** Various types of sound; sources of sound; vibration as a cause of sound; frequency; medium for propagation of sound; idea of noise as unpleasant and unwanted sound, and the need to minimise noise. Demonstrating and distinguishing different types (loud and feeble, pleasant/ musical and unpleasant / noise, audible and inaudible) of sound. Producing different types of sounds. using the same source. Making a 'Jal Tarang'. Demonstrating that vibration is the cause of sound. Designing a toy telephone. Identifying various sources of noise (unpleasant and unwanted sound) in the locality and thinking of measures to minimise noise and its hazards (noise pollution).

5. **Light:** Laws of reflection, characteristics of image formed with a plane mirror. Regular and diffuse reflection. Reflection of light from an object to the eye. Multiple reflection. Dispersion of light. Structure of the eye. The lens becomes opaque, and light does not reach the eye. Visually challenged people use other senses to make sense of the world around them. Locating the reflected image using a glass sheet and candles. Discussion with various examples. Activity of observing an object through a straight and bent tube. Observing multiple images formed by mirrors placed at angles to each other. Making a kaleidoscope. Observing the spectrum obtained on a white sheet of paper/wall using a plane mirror inclined on a water surface at an angle of 45°. Observing the reaction of a pupil to a shining torch. Demonstration of the blind spot. Description of case histories of

visually challenged people who have been doing well in their studies and careers. Activities with a Braille sheet.

6. **Electricity:** Water conducts electricity depending on the presence/ absence of salt in it. Other liquids may or may not conduct electricity. Chemical effects of the current. Basic idea of electroplating. Activity to study whether current flows through various liquid samples (tap water, salt solution, lemon juice, kerosene, distilled water if available). Emission of gases from salt solution. Deposition of Cu from copper sulphate solution. An electric pen using KI and starch solution. A simple experiment to show electroplating.

7. **Rain, Thunder and Lightning:** Clouds carry an electric charge. Positive and negative charges, attraction and repulsion. Principle of lightning conductor. Discussion on sparks. Experiments with a comb and paper to show positive and negative charges. Discussion on lightning conductor

CHEMISTRY

- Particulate nature of Matter
- Nature of Matter: Elements, compounds, Mixtures
- The Amazing World of Science: Solute, Solvents and Solutions
- Coal and Petroleum
- Combustion and flame

BIOLOGY

- Crop production and management
- Useful and harmful microorganisms
- Plant and animal conservation
- Cell structure and function
- Animal reproduction
- Adolescence

MATHEMATICS

1. **Number System:** Square & Square roots, Cube & Cube Roots, Exponents & Powers, Allegation & Mixture, Average, Playing with Numbers, Prime & Composite Numbers, Wilson & Fermat's little theorem of divisibility, Direct and Inverse Proportions, Information Processing

2. **Arithmetic:** Comparing Quantities, Compound Interest, Train Problem,

3. **Mensuration:** Area of a trapezium, a polygon and a semicircle, Surface area & volume of a cube, a cuboid, a cylinder, visualizing solid shapes,

4. **Algebra:** Algebraic Expressions & Identities, Linear Equations in one variable, Factorization of Algebraic Expressions, Laws of Indices, Introduction to Graphs.

5. **Geometry:** Triangle, Triangle Inequalities, Understanding Quadrilaterals, Pythagoras Theorem, Sector and Segment, Butterfly theorem, Polygon & polyhedron

6. **Data Handling:** Interpreting Histogram, Frequency polygon, Ogive & pie charts, Consolidating and generalizing the notion of chance in events.

LOGIC AND REASONING

Cryptarithmetic/Alphametics, Logical Sequence Series(number, alphabet & image and more), odd one out, Coding-decoding, Blood Relations, Binary Logic, Mathematical Operations, Standard Logical Reasoning Sets, Visual Puzzles, Word Problems, IQ puzzles, Sequencing, Grid Puzzles, Cubes and Dices, Logical Venn Diagrams, Math based reasoning, Direction, Order and Ranking, Clocks & Calender, Analogy, Analytical puzzles, Logical Inequalities, Image based puzzles(like mirror & water image, rotation, best fit, Odd one out and more),Figure counting, Logical Sequence of Words, shape constructions, symmetry, number puzzle, pattern-based puzzle, Sudoku (4×4 & 5×5), Geometrical figures related problem.

LIFE STORY OF INDIAN SCIENTIST(S)

Satyendra Nath Bose: Father of Bosons (All Chapters)

INDIAN CONTRIBUTIONS TO SCIENCE

Indian Contributions to Science (Chapters 1-7 & 9-12)

UNITS AND TOPICS FOR LEVEL-II

IKS-ICS SUPPLEMENTARY READING (INDIAN KNOWLEDGE SYSTEM)

Units		**Sub-units (Scope and Limitations)**
Unit No.	**Title of the Unit**	**Sub-units included**
1	**IKS and overview of the ICS**	Understanding IKS, Approaches to study IKS, Classification of Chaturdasa Vidyās (Vedas, Vedāṅgas, Upāṅgas) and groupings of the 64 Kalās, historical significance of Chaturdasa Vidyās and Kalās in ancient education system, Areas of study covered in ancient India, Theoretical and vocational knowledge imparted in ancient India, Accessible and respectable education in ancient India.
2	**Astronomy**	Measurement of time, Divisions of time in the *Vedas*, Concept of solar year and lunar year, Atronomy in Siddhāntic era, Astronomy in post Siddhāntic era, Introduction to the ancient Indian astronomical *yantras.*

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Units		Sub-units (Scope and Limitations)
Unit No.	**Title of the Unit**	**Sub-units included**
3	**Mathematics**	Systems of Numeration in ancient India: Bhūtasaṅkhyā, Āryabhaṭa numeration, Kaṭapayādi (Kerala school of mathematics.) Important Contributions of Sangamagrama Madhavan
4	**Chemistry**	Sanskrit Vocabulary in Chemistry and its global impact. The use and processing of metals such as gold, iron, and zinc. Copper and Alloys like bronze and tin, role of chemistry in ancient Indian medicine. Introduction to Ancient Texts: Rasārṇava (RNV) and Rasaratnasamuccaya (RRS)
5	**Agriculture**	Ancient texts on agriculture, Indigenous knowledge and agricultural practices, Soil classification, Rainfall prediction methods, White revolution in India
6	**Āyurvēda and Medical Science**	Ayurvedic approach to health, Basic idea about rich literature in Ayurveda, Schools and traditions of Ayurveda, Concept of triguna and tridosha, Importance of Daily and seasonal regimen as explained in Ayurveda, Properties and medicinal uses of plants: Pippali Haridra, Yaṣṭīmadhu, Dāḍima, Cāṅgēri as per ayurvedic literature.
7	**Environmental conservation**	Protection of biodiversity in Indian culture through sacred groves and provision of judicial action to protect plants and animals, Community participation in conservation with example of Bishnois in Rajasthan, Conventional, non-conventional and clean energy sources in modern India
8	**Modern Sciences**	Indian Oceanography: Early evidences of knowledge of oceans, marine trade in Indian Civilizations. Deep ocean mission, Mission Antarctica