

Andhra Pradesh Board Science Syllabus for Class 9

COURSE STRUCTURE SCIENCE

Class - IXth

Unit 1

Science and its History History of Science. Important Scientific discoveries and its Effect on our life Styles. Our Important Scientists and Scientific Institutions. Science in Modern Context.

Unit 2

Measurement in science and Technology and Nature of Matter. Matter -Nature and Behaviour :- Measurement in Science and technology International system of Units (S.I.), Maintenance of its standards. Nature of Matter :- What is Matter? Classification of Matter :- Type and Properties of Elements, Compound and Mixture-Difference between Element, Compound, Mixture, Solution- Homogenous and Heterogenous, Suspension and Colloid types of solution. Atoms and Molecules, Atomic theory of matter (Dalton's postulates), Atomic and molecular masses, the mole concept law of constant, proportion, determination of empirical and molecular formulae of simple substances.

Unit 3 Motion, Force and Gravitation

Motion :- In living and Non-living uniform and non-uniform motion, one dimension, some technical words-Body, particle, body, distance, displacement, speed, velocity, Acceleration, retardation, difference between velocity and speed. Force :- Mass, Inertia, classification of force, Newton's first law of motion, momentum, Impulse, Newton's second law of motion, Unit of force, Law of conservation of momentum, Uniform circular motion, Simple harmonic motion. Friction - Factors affecting friction, Sliding & rolling friction, Advantages & Disadvantages, friction (Example) Ways and means to increase and decrease of the friction, Pressure thrust, Archimedes principles and its applications, relative density. Gravitation :- Gravitational force, Universal Law of gravitation, Acceleration due to gravity, mass and weight, free falling body under the influence of gravity.

Unit 4

Work, Energy & Power -Work done by constant force, power energy, Kinetic and potential, Heat and temperature, Conversion of temperature in Celsius and Kelvin scale, thermometer, laboratory and clinical, Heat - specific heat, Heat capacity, calculation of heat with the method of mixture. change of state, latent heat, cooling due to evaporation, humidity and specific humidity, Thermal expansion, Linear coefficient of expansion, coefficient of expansion in area, coefficient of volume expansion.

Unit 5

Sound:- Nature of sound and its propagation, range of hearing in humans, Structure of Human ear, ultrasonic waves and its applications. Reflection of sound - echo, sonar, Types of wave, longitudinal and transverse, amplitude, wave length and frequency.

Unit 6

Structure of Atom :- Constituents of an atom - electron, Proton, neutron, atomic number and mass number, Isotopes, distribution of electrons in shells (upto atomic number 20) valence electrons and valency. Radioactivity, Radioisotopes and their application.

Unit 7

Periodic Table of Elements :- A brief historical perspective of periodic classification of elements, periodic law, modern periodic table of 18 columns, variation in properties across a period and along a group- metallic and non metallic.

Unit 8

Chemical Bonding :- Formation of a chemical Bond, types of bonds- ionic and covalent, electronegativity and polar covalent bond, properties of ionic and covalent compound. Reactions :- chemical reactions, Formulae of simple compounds. equation of simple chemical reaction and their balancing. Types of chemical reactions- combination, decomposition, displacement (single and double displacement) oxidation and reduction (in terms of gain/loss of electrons).

Unit 9

Living world:- Organisation in the living world:- Cell and cell structure- Cell structure, difference between prokaryotic and eukaryotic cells, functions of cell organelles, cell division mitosis (different stages), elementary idea of meiosis. Tissues-Plant tissues- Structure and functions, animal tissues, structure and functions. Diversity:- In the living world general idea of classification of living organisms and their importance, nomenclature, classification (two kingdom) with characteristics and examples up to phylum in plants and invertebrate animals and upto class levels in chordate animals.

Unit 10

Nutrition and Health:- General idea of Human body, health and its importance, community and personal health, conditions essential for good health. (Nutrition proper habits, exercise, and relaxation). Components of food, balanced diet, under-nutrition and malnutrition, food adulteration (definition, common food adulterants, their tests and harmful effects) quality of drinking water, WHO elementary introduction Human Diseases:- Diseases-definition-Source and types of diseases (Communicable and non Communicable diseases, Symptoms, prevention and control of some diseases, malaria, influenza, Cholera, diarrhoea, Jaundice, typhoid, rabies, AIDS, tuberculosis. Deficiency diseases-protein energy malnutrition (Marasmus and kwashiorkor) Vitamin deficiency (Scurvy, rickets, beriberi, Pellagra, Xerophthalmia, Mineral deficiency (Anaemia, Goitre).

Unit 11. Food Resource- Sustainable Agriculture :-

Mixed farming, mixed cropping, crop rotations (Biological and Economic Consideration) Varietal improvement through breeding and selection. Food Resource- Animals Improved breeds,- Cattle and live stock breeding, food and shelter for livestock, prevention against major

diseases.

Unit 12. Our Natural Resources :-

Our Natural Resources- Air, Water, Soil, Minerals, Energy, flora and fauna, Management and replenishment of Natural resources. Coal and Petroleum - Coal and Petroleum as natural resources of carbon and its compounds, coal, its destructive distillation (in brief). Carbon - Tetravalency and Catenation. Hydro Carbon classification. (Saturated and Unsaturated). Homologous series, Isomerism; Preparation and properties of methane, ethane, and ethyne.

Unit 13. Environment - Our Environment :-

Habitat and Adaptation, Habitat and its types, adaptation in plants and animals. Medicinal plants existing and are being planted around human habitat- like Tulsi, Vinca Rosia, Oak, Bhuaionla, Fenugreek, Coriander, Kalmegh, Rose, Bhringraj, Ginger, Turmeric, Garlic etc. their botanical names, study of their medicinal use and utility in environment conservation.

Biosphere: Ecosystem and biosphere structure of an ecological System, food chain food webs, trophic levels, function of an Ecological system, flow of energy in nature conservation and energy crisis, biogas, chemical cycles of materials (Carbon and Nitrogen). Types of Ecosystem, biomass, biodiversity and its importance.