

**STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING -CHENNAI – 06**

**TNCF – 2017 – DRAFT SYLLABUS – SCIENCE**

**STANDARD 1 -10**

**Draft Syllabus for Classes 1-5 (EVS & Science) Primary Science**

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
<b>1</b>	<b>My Family</b>	<b>Picture descriptions</b> 1.1 My family 1.2 My Relatives 1.3 Good Manners- (Greeting, Respect, Welcome, Discipline)	<b>Picture descriptions</b> 1.1 Family Tree 1.2 Neighbourhood (Help, Co- operation) 1.3 Kinds of Houses 1.4 Traditional games 1.5 Games- Played at home 1.6 Values and social skills 1.7 Care for elders	-----	-----	-----

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
2	Plants	<b>Picture descriptions</b> 2.1 Plants around us: 1. Fruits 2. Flowers 3. Leaves 4. Vegetables	<b>Picture descriptions</b> 2.1 Parts of a plant 2.2 Different kinds of Plants - Grasses, Herbs, Shrubs, Trees - Climbers and creepers 2.3 Tree as habitat 2.4 . Benefits of plants	2.1 Parts of plants and their functions 2.2 Types of roots - Tap, Fibrous 2.3 Types of Plants based on habitat - Land, Water and Desert	2.1 Flowering plants 2.2 Parts of flowers and their functions 2.3 Green and Non-green plants 2.4 Plants as Primary Producers(Food preparation in plants) 2.5 Edible Parts of plants- Root, Stem, Leaves, Flowers, Seed 2.6 Exotic plants	2.1 Why do flowers have bright colours and smell? 2.2 Pollination 2.3 Life cycle of Flowering Plants 2.4 Dispersal of seeds 2.5 Cotyledons 2.6 Germination of seeds 2.7 Agriculture- Types of soil -Sandy soil -Loamy Soil -Clayey Soil 2.8 Friends of farmer - Honey Bee - Earthworm - Dragon fly

Sl.No	Topic	Environmental Science		Science		
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3	Animals	<b>Picture descriptions</b> 3.1 Identifications of animals around us (Birds, Insects, Mammals) 3.2 Protection of animals 3.3 My favourite Animal(Activity)	<b>Picture descriptions</b> 3.1 Animals and their homes 3.2 Types of animals- Domestic and wild 3.3 Animals associated with Human Welfare 3.4 Animals and their young ones	3.1 Animals in different environment- Land , Air and Water 3.2 How do animals procure food 3.3 Food and mouth parts in relation to food eaten (Birds and Insects- Mosquito, Butterfly) 3.4 Herbivores Carnivores Omnivores	3.1 Animal group behaviour 3.2 Special senses in ants and bats 3.3 Night active animals 3.4 Parental care (Kangaroo, Cow and Human) 3.5 Structure of insects (pictorial descriptions)	3.1 Honey Bee- Types, kinds and its uses, Apiculture-Social Life 3.2 Life cycle of butterfly 3.3 Reproduction in animals (i) Asexual ,Sexual, (ii) Oviparous animals (iii) Viviparous animals 3.4 Endangered Species (Red Book) 3.5 Sanctuaries and National parks 3.6 Prevention of cruelty to animals
4	My Food	<b>Picture descriptions</b> 4.1 I need food 4.2 Our Daily Food- Activity 4.3 Journey of Rice (Story)	<b>Picture descriptions</b> 4.1 Why do we need food? 4.2 Sources of food 4.3 Healthy and Unhealthy foods 4.4 Junk foods 4.5 Healthy food habits	4.1 Ingredients of food 4.2 Balanced diet 4.3 Food Habits in different places /different age groups 4.4 Traditional food 4.5 Nutrition garden	4.1 Raw and cooked food (Activity-Salads Preparation) 4.2 Cooking Practices 4.3 Cooking Utensils 4.4 Food hygiene 4.5 Food during illness 4.6 No Wastage of food	4.1 Preservation and spoilage of food 4.2 Kitchen safety 4.3 Food Pyramid (what should we eat) 4.4 Obesity 4.5 Deficiency disease/ Malnutrition

Sl.No	Topic	Environmental Science		Science		
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5	My body	<p><b>Picture descriptions</b></p> <p>5.1 Parts of my body (Head, Face, Cheek, Chin, Teeth, Tongue, Eye, Nose, Ear, Skin, Hand, Leg)</p> <p>5.2 My Senses</p> <p>5.3 Keeping clean and healthy</p>	<p><b>Picture descriptions</b></p> <p>5.1 Simple Body Movements</p> <p>5.2 Role of Sense organs</p> <p>5.3 Stages of growth</p>	<p>5.1 Cleanliness (Hand wash, Toilet habit, Bathing)</p> <p>5.2 Precautions to be taken to Protect the sense organs</p> <p>5.3 Good touch, Bad Touch and Don't Touch (within family)</p> <p>5.4 Helping people with physical or sensory challenges</p> <p>5.5 Importance of physical exercises</p>	<p>5.1 Internal organs (Brain, Heart, stomach, Lung, Kidney, Muscles and Bones)</p> <p>5.2 Importance of Oral Health</p> <p>5.3 Good touch, Bad touch and Don't Touch -Known and unknown persons</p>	<p>5.1 Organ Systems</p> <ul style="list-style-type: none"> <li>- Digestive System</li> <li>- Respiratory System</li> <li>- Circulatory System</li> <li>- Excretory System</li> <li>- Nervous System (Brain-Fore, Mid, Hind Brain)</li> </ul>
6	Water	<p><b>Picture descriptions</b></p> <p>6.1 Fun with water</p> <p>6.2 We need water in daily life</p>	<p><b>Picture descriptions</b></p> <p>6.1 Sources of water- Rain Water, Well, Bore Well, Waterfalls, River, Stream, Pond, Lake, Sea, Ice, Glaciers, Iceberg</p> <p>6.2 Journey of rain (Song)</p>	<p>6.1 Water as a prime source of life</p> <p>6.2 Potable Water</p> <p>6.3 Saving Water</p> <p>6.4 Conservation of water bodies –Ponds and lakes</p>	<p>6.1 Change of state in water (Ice, Water and Steam)</p> <p>6.2 Water cycle and importance</p> <p>6.3 Rain water harvesting</p>	<p>6.1 Fresh Water Management</p> <p>6.2 Waste water management</p> <p>6.3 Water Pollution: Causes and Prevention</p> <p>6.4 Water borne Diseases</p>

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
7	Air	-----	7.1 Our Surrounding (PanjaBhoodas) <ul style="list-style-type: none"> <li>- Land</li> <li>- Water</li> <li>- Fire</li> <li>- Air</li> <li>- Sky</li> </ul>	7.1 Science fun- wind (air) experiments  7.2 Breathing (Inhale and Exhale)  7.3 Moving Air, Types of wind- Breeze, Gale and Storm	7.1 Air is a mixture 7.2 Composition and Proportions of components in Air 7.3 Effects of breathing Unclean Air	7.1 Atmospheric layers 7.2 Game with wind (air) 7.3 Air Pollution- Causes and prevention 7.4 Air borne diseases 7.5 Importance of air and wind energy (Wind mill) in daily life
8	Matter and Materials	<b>Picture descriptions</b> 8.1 Materials around the child: (Wood, Stone, Sand, Clay, Metals, Cloth)	<b>Picture descriptions</b> 8.1 Natural and Man-made materials 8.2 Introduction of matter 8.3 Physical Properties of matter (Colour, Odour(Smell), Taste and Shape)	8.1 States of matter 8.2 Introduction - Change of states of matter 8.3 Properties of matter	<b>Basic concept</b> 8.1 Properties of Materials (Hard, Soft, Shiny, Dull, Smooth, Rough, Waterproof, Transparent, Flexible, Rigid ) 8.2 Transparent, opaque and Translucent objects /Reflection	8.1 Transformation of natural resources into materials for use (Fibre to fabric and Grain to food) 8.2 List out:- House hold things from Olden days and modern days 8.3 Conduct experimental set up to test floating, sinking and mixing

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
9	Force, Work, and Energy	----	----	9.1 Simple movements and actions 9.2 Force - Push and Pull , Friction and their applications	9.1 Work and Energy 9.2 Simple machines	9.1 Energy and Different forms of energy - Mechanical Energy,  - Wind Energy,  - Heat Energy,  - Light Energy,  (simple Explanation with simple examples)  9.2 Conservation of
10	Transport	<b>Picture descriptions</b> 10.1 Transport - Story	<b>Picture descriptions</b> 10.1 Mode of Transport 1. Road ways 2. Water ways 3. Air ways 4. Railways	----	----	----
11	Day and Night	<b>Picture descriptions</b> 11.1 Day sky –Sun 11.2 Night sky-Moon, stars 11.3 Thunder and Lightning	<b>Picture descriptions</b> 11.1 Sky Observation (Day and Night) 11.2 Rhythms of day and night (Animals, Plants) 11.3 Directions (East, West, North and South) and Time	----	----	----

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
12	Our Environment	<b>Picture descriptions</b> 12.1 Living and non-living - Soil, Mountain River, Sea, Pond, Lake, Sky, Sun, Air, Plants, Animals	<b>Picture descriptions</b> 12.1 Environments - Plains - Forest - Hills - Deserts - Ponds - River - Sea	12.1 Abiotic and Biotic factors 12.2 Interaction between Abiotic and Biotic factors	12.1 Waste Management 12.2 3R - Reduce, Reuse, Recycle 12.3 Conserve the Environment 12.4 Environment friendly materials	12.1 Farms: - Dairy farm - Poultry farm 12.2 Manure 12.3 Vermi culture



Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
13	Science in everyday life	<p><b>Picture descriptions</b></p> <p>Wonders of Science</p> <p>13.1 Type of clothes</p> <p>13.2 Clothes for different Seasons and Reasons</p>	<p><b>Picture descriptions</b></p> <p>Wonders of Science</p> <p>13.1 Flower: Colour and smell</p> <p>13.2 Plants have sense: Touch me not plant</p> <p>13.3 Activity- calotrophis- Erukku flower</p>	<p>13.1 Kitchen science</p> <p>- Boiling water- Cooking idly</p> <p>- Pressure cooker</p> <p>- Refrigerator</p> <p>13.2 Activity- Thermometer - Boiling temperature of Water and Milk</p>	<p>13.1 Milk and its uses</p> <p>13.2 What happens when food materials are being cooked?</p> <p>13.3 Baking of bread, Biscuit and Cake</p>	<p>13.1 Biography of a Tamil Nadu Scientist - C V Raman- Why the sky is Blue</p> <p>13.2 Learning scientific principles in daily life – Reversible and Irreversible Process</p> <p>13.3 Quantity and quality of waste materials generated in school/home environment</p>

Sl.No	Topic	Environmental Science		Science		
		Class 1	Class 2	Class 3	Class 4	Class 5
14	Our Society	<b>Picture descriptions</b> 14.1 Local Festivals 14.2 Village/ Town Specific Festival - Pongal, - Diwali, - Ramzan, - Christmas 14.3 Our Friends: Teacher, Doctor, Police, Postman, Milkman, Vegetable vendor, Nurse, Shop keeper	<b>Picture descriptions</b> 14.1 Festivals and fairs 14.2 - Religious festivals - National festivals - Folk arts and song (Nativity based) 14.3 Science fair /exhibition 14.4 Our friends: Farmer, Electrician, Driver, Plumber, Soldier Tailor, Carpenter and Conductor	----	----	----
15	My home and my neighbourhood	<b>Picture descriptions</b> 15.1 My Home 15.2 Village /Town/City 15.3 Neighbourhood 15.4 Safety	----	----	----	----
16	My beloved Motherland	----	<b>Picture descriptions</b> 15.1 Village/Town/City 15.2 National days 15.3 National symbols 15.4 National Flag 15.5 State symbols 15.6 Father of our Nation 15.7 First President 15.8 First Prime Minister	----	----	----

**State Council of Educational Research and Training, Chennai-6**

**Draft syllabus – Final**

**CLASS VI to X - Physics**

<b>Topic</b>	<b>STANDARD VI</b>	<b>STANDARD VII</b>	<b>STANDARD VIII</b>	<b>STANDARD IX</b>	<b>STANDARD X</b>
<b>1. Measurement</b>	<p><b>Measurement</b></p> <p>Concepts of Measurements</p> <p>Fundamental units (Length, time and mass)</p> <p>– Definition</p> <p>Methods of Measurement of Length, Mass and Time</p> <p>Multiples and sub multiples of units.</p> <p>Volume of regular and irregular object.</p>	<p><b>Measurement</b></p> <p>Idea of derived quantities and Units (Area, Volume, Density of solids and liquids)</p> <p>Explanation and Measuring Astronomical distance. 1 AU &amp; 1 light year.</p> <p>Numerical problems</p>	<p><b>Measurement</b></p> <p>S.I. System of units – Temperature - Electric current</p> <p>Amount of substance –</p> <p>Luminous intensity, Angle &amp; Solid Angle</p> <p>Physical quantities, formulae and its units;</p> <p>Quartz clock.</p> <p>Type of watch.</p> <p>Accuracy &amp; Measurement.</p> <p>Estimation &amp; approximation</p>	<p><b>Measurements and measuring Instruments:</b></p> <p>Introduction</p> <ul style="list-style-type: none"> <li>• Importance of accurate measurements</li> <li>• S.I. Units</li> <li>• Scientific Notation</li> <li>• Measuring Length principle, pitch, least count, zero error of Vernier Caliper &amp; Screw Gauge.</li> </ul> <p>Experiments</p> <p>Measuring Mass &amp; weight</p> <ul style="list-style-type: none"> <li>* Beambalance</li> <li>* Spring balance</li> <li>* Digital balance</li> </ul>	-----

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
	SI system Beam balance & Electronic balance Numerical problems		Numerical problems		

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
<b>2. Work, Power and Energy</b>	<b>Forces and Motion.</b>	<b>Motion and rest</b>	<b>Forces and Pressure</b>	Forces and Motion	<b><u>Kinematics:</u></b>
	Moving things around us	Distance - displacement	Definition	Types of Motion:	Introduction
	Types of Motion	Speed & velocity	Action of force and its effects	Circular motion	Newton's Laws of Motion
	Linear and Circular	Distance- time graph	Forces (definitions only)	-Uniform circular motion	- 1 <sup>st</sup> Law
	Uniform and Non-uniform motion	Velocity – time graph	Pressure	-Centripetal force	- 2 <sup>nd</sup> Law
	Measuring speed and Units of speed	Acceleration – time	Pressure exerted by liquids and gases	-Centripetal acceleration	- 3 <sup>rd</sup> Law
	Science today – Robot	Centre of gravity and three states of equilibrium	Pressure exerted by air	-Centrifugal reaction	Mass-Weight and Weightlessness
	Problems related to Speed, Distance and Time	Plumb line and spirit level,	Atmospheric pressure	Motion of Falling body	Acceleration due to gravity
	Numerical problems	Science today	Pascal's law, application.	-Free fall.	Mass of Earth.
		Adventures in sports – like a bird flies	Surface tension & viscosity.	Graphical representation of	Numerical problems
	measure and calculate the speed of moving objects	Friction, applications	Motion along straight line.		
	pulse rate	Factors affecting Friction	Velocity-Time graph.		
	Numerical problems	Friction - necessary	Equations of Motion.		
		Increasing and reducing friction	work		
		Numerical problems	power		
			Numerical problems		
			Simple pendulum		

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
3. Light	-----	<p><b>Light</b></p> <p>Sources of Light</p> <p>Rectilinear propagation of Light</p> <p>Pinhole camera</p> <p>Shadows</p> <p>Colours in Spectrum</p> <p>Reflection</p> <p>Plane Mirror (Right or left)</p> <p>Sunlight – seven colours – dispersion &amp; synthesis of colours – Newton’s Disc.</p> <p>Numerical problems</p>	<p><b>Light</b></p> <p>Types of mirror(Spherical and Parabolic mirror)</p> <p>Images of spherical mirrors</p> <p>Parts of curved mirrors (Centre of curvature, principal focus, pole, principal axis, focal length)</p> <p>Application of mirrors</p> <p>Laws of reflection</p> <p>Regular and Irregular reflections</p> <p>Multiple reflections</p> <p>Multiple images (periscope, kaleidoscope)</p> <p>Refraction – Snells’ law (Qualitative)</p> <p>Dispersion – using prism</p> <p>Numerical problems</p>	<p><b>Light</b></p> <p>Introduction: Speed of light</p> <p><b>Optical Geometry</b></p> <ul style="list-style-type: none"> <li>❖ Laws of Reflection</li> <li>❖ Laws of Refraction</li> <li>❖ Total internal reflection and its application</li> </ul> <p><b>Mirrors.</b></p> <ul style="list-style-type: none"> <li>❖ Plane Mirrors-Lateral inversion</li> <li>❖ Spherical mirrors</li> <li>❖ Image Formation of Spherical Mirrors</li> <li>❖ Sign Convention</li> <li>❖ Mirror Formula</li> <li>❖ Properties of the image</li> <li>❖ Distance for full image.</li> </ul>	<p><b>Optics</b></p> <p>Introduction</p> <p><b>Revision of properties of light</b></p> <p>Laws of Refraction</p> <p>Scattering of light</p> <p><b>Optical Geometry</b></p> <p>Image formation of Concave and Convex lens</p> <p>Lens formula</p> <p>Magnification</p> <p>Refractive Index</p> <p>Power of lens</p> <p><b>Optical Instruements:</b></p> <p>Human Eye</p> <p>Power of Accommodation, Defects of Eye and Correction</p>

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
					Telescope & Types, Microscope- simple, compound and travelling Microscope.
4. Heat	<p>Heat</p> <p>Heat – introduction</p> <p>Hot and cold objects</p> <p>Expansion in solids</p> <p>Cubical and linear</p> <p>Uses of heat</p> <p>Reasoning questions based on expansion to be included</p> <p>Flow of Heat (Hot to cold) Thermal Equilibrium Sources of heat</p> <p>sun, combustion or burning, friction,</p>	<p><b>Heat</b></p> <p><b>Heat &amp; Temperature.</b></p> <p><b>Thermodynamic scales:</b></p> <p>Celsius, Fahrenheit, Kelvin and Rankin.</p> <p>Measuring temperature:</p> <p>Clinical and Laboratory thermometer.</p> <p>Thermometric liquids</p> <p>Numerical problems.</p>	<p><b>Heat (Qualitative)</b></p> <p>Effects of Heat</p> <p>Transfer of Heat</p> <p>Conduction, Convection and Radiation</p> <p>Calorimetry and Calorimeter</p> <p>Thermostat</p> <p>Thermos flask</p>	<p><b>Heat</b></p> <p>Effects of Heat.</p> <p>Heat-transfer-Calculation.</p> <p>Specific Heat Capacity.</p> <p>Thermal capacity.</p> <p>Change of State.</p> <p>Specific Latent heat.</p> <p>Numerical problems.</p>	<p><b><u>Thermal Physics:-</u></b></p> <p>Introduction</p> <ul style="list-style-type: none"> <li>• Effects of Heat <ul style="list-style-type: none"> <li>* Expansion of Matter due to heat,</li> <li>* Real and Apparent expansion</li> <li>* application</li> </ul> </li> </ul> <p><b>Gas:</b></p> <ul style="list-style-type: none"> <li>* Boyle’s Law – Verification</li> <li>* Charles’s Law</li> </ul> <p><b>Gas Equation</b></p> <p><b>Temperature</b></p> <ul style="list-style-type: none"> <li>* Kelvin/ Absolute Scale of temperature</li> </ul> <p>Numerical problems</p>

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
	electrical heat and temperature  Numerical problems				
<b>5. Electricity</b>	<b>Electricity</b>  Conductors and Insulators. An electric circuit Symbols of electric components  sources of Electricity – Primary and Secondary cells	<b>Electricity</b>  1. Explain the classification of materials based on electrical properties.  2. Describe simple electric circuit – Open circuit and Closed circuit.  3. Explains heating effect and magnetic effect of electric current.	<b>Electricity</b>  Electric charges at rest  Types of charges  Transfer of charges  Electroscope  Gold leaf electroscope  6. Lightning and Thunder  7. Earthing  8. Lightning arresters  9. Types of circuits - simple, series, parallel  10. Effect of electric current  Chemical effect – electro plating  heating effect- electric fuse	<b>Electricity</b>  Effects of Current -Heating effect -Magnetic effect -Electric charges electric field -Coulomb’s law -Circuit diagrams: Series and parallel - Direct and alternating current - Safety of Electricity	<b>Electrical Circuits:</b>  1. Electric Current  2. Electric Circuit  3. Electric Potential  4. Potential difference  5. Circuit diagram  6. Ohm’s Law  7. Electrical Resistivity and Conductivity  8. System of Resistors  9. Heating effect of electric current  10. Electric Power  11. Domestic Electric Circuits



Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
			Numerical problems		12.Numerical problems 13.LED Bulb, 14.LED TV
<b>6 Magnetism</b>	<b>Magnetism</b> -Discovery of magnets -Magnetic and non magnetic materials -Magnetic poles - Properties of Magnets -Science today – Flying trains	-----	<b>Magnetism</b> Magnets and its types – Field around a bar magnet, Tracing magnetic field using compass needle. – Types of magnetic materials – Magnetic properties – Earth’s magnetism – Uses of magnets.	1. Introduction 2 .Magnetic field 3 .Magnetic lines of forces 4. .Force on a current carrying conductor in a magnetic field 5.Parallal current carrying conductor 6 .Flemings left hand rule 7 .Electric motor 8 .Electromagnetic Induction, Transformer 9. Fleming ‘s Right hand rule 10. Electric Generator 11.Applications of electromagnets Numerical problems	-----
<b>7. Sound</b>	-----	-----	<b>Sound</b>	<u>Sound</u>	<u>Acoustics</u>

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
			Wave motion Medium of Propagation Sound produced by vibrating body (activities – rubber band, striking a pan, vibrating dish) Human ear and hearing – Larynx, windpipe, vocal cord Musical instruments Properties of sound (Pitch , frequency and Timbre) Audibility and range Noise and noise pollution Numerical problems	Introduction: Production and propagation of sound waves Characteristics and types of waves: Amplitude, Time Period, Frequency, Wavelength & Velocity. Deduction of Sound waves; Reflection of Sound waves. Echo; Reverberation Decibel (db); Ultrasonics SONAR; Stethoscope and ECG	1. Sound waves 2. Reflection of Sound waves 3. Echo 4. Use of Echoes 5. Determination of speed of sound by the method of Echo Doppler s effect. 6. Numerical problems
<b>8. Universe and Space Science</b>	Night sky (stars , planets, constellation)  Solar system – geocentric and Heliocentric  Orbit – light year – Astronomical unit  Evolution of universe of current theory	Basic concepts of Universe- milky way  Building blocks of Universe  Satellites - Natural and Artificial  ISRO	History of Chandrayan&Mangalyan probe  Rocket parts and fuels Launching of rockets  <b>NASA</b>	<u><b>The Universe</b></u> <ul style="list-style-type: none"> <li>• Building blocks of Universe</li> <li>• Orbital Velocity and timeperiod</li> <li>• Keplers laws</li> <li>• ISS</li> </ul>	

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
9. Fluids	-----	-----	-----	<p><b>Fluids</b></p> <ul style="list-style-type: none"> <li>• Pressure in Fluids</li> <li>• Relative Density</li> <li>• Buoyant force or up thrust-Cartesian divider</li> <li>• Atmospheric Pressure</li> <li>• Equal volume of fluids equal Buoyant Forces</li> <li>• Archimedes's Principle</li> </ul> <p>Density:</p> <ul style="list-style-type: none"> <li>• Density</li> <li>• Measurement of density</li> <li>• Buoyancy &amp; Floatation</li> <li>• HydrometerCommon Hydrometer <ul style="list-style-type: none"> <li>➤ Making of Lactometer</li> <li>➤ Atmospheric Pressure</li> <li>➤ Measuring Atmospheric Pressure</li> <li>➤ Pascal's Principle</li> </ul> </li> </ul>	-----

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
				➤ Jockey and Hydraulic lift	
10.Atomic physics	-----	-----	-----	-----	<b>Atomic physics</b> Radioactivity Properties of alpha, Beta, gamma Rays. Nuclear fission Chain reactions Nuclear Fusion Uses of Radio Activity safety measures Nuclear Reactor [out line]

**State Council of Educational Research and Training, Chennai-6**

**Draft syllabus – Final**

**CLASS VI to X – Chemistry**

<b>Topic</b>	<b>STANDARD VI</b>	<b>STANDARD VII</b>	<b>STANDARD VIII</b>	<b>STANDARD IX</b>	<b>STANDARD X</b>
<b>1.Matter around us</b>	<b><u>Matter</u></b>	<b><u>Matter</u></b>	<b><u>Matter</u></b>	<b><u>Matter</u></b>	<b><u>Solution</u></b>
	1.1 Classification of matter 1.2 Solids, liquids, gases Introduction 1.3 Pure substances and mixed 1.4 substances 1.5 Need for Separation 1.6 Definition of Separation 1.7 Separation of substances 1.7.1 Hand picking 1.7.2 Winnowing 1.7.3 Sieving 1.7.4 Magnetic Separati	1.1 Separation of substances - Evaporation - Condensation - Crystallization. 1.2 Effect of temperature on - solid, liquid and gases 1.3 Occurrence of Elements and Compounds in nature	1.1 Compounds in solid state 1.2 Compounds in liquid state 1.3 Compounds in gaseous state 1.4 Uses of compounds in day to day life 1.5 Metals and non-metals 1.6 Symbols of elements 1.7 Formula of common compounds 1.8 (5 examples) 1.9 Valency	1.1 Classification of matter characteristics of matter differences between mixture and compound 1.2 Types of mixtures 1.3 Homogenous mixture and heterogeneous mixture separation of mixtures 1.4 Sublimation 1.5 Types of distillation 1.6 -Definition of absorption and adsorption 1.7 types of chromatography 1.8 Centrifugation	1.1 Solution - Solvent and Solute - Types of Solution - Aqueous and Non - aqueous solution - Saturated and unsaturated solution - Diluted and Concentration solution 1.2 Factors affecting Solubility, Solubility of Compounds - Tables 1.3 % of Composition 1.4 Mass Percentage 1.5 Volume Percentage 1.6 Hydrated Salts (eg.) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ 1.7 Deliquescence salts

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
	on 1.7.5 Sedimentation 1.7.6 Decantation 1.7.7 Filtration	1.4 Elements in human body 1.5 Elements in air 1.6 Molecules of Elements and Compounds 1.7 Symbols of some common elements 1.8 Atomicity of elements		1.9 solvent extraction 1.10 Solution & Colloids 1.11 Solute and solvent - types of solution - colloids, true solution and suspension - types of colloids - tyndal effect Brownian movement - applications. 1.12 Emulsion and its types.	1.8 Problems based on Solubility products and percentage

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
<b>2. Changes around us</b>	<u>Changes around us</u> 2.1 What is change ? 2.2 Change of state 2.3 Classification of changes 2.3.1 slow and fast 2.3.2 reversible and irreversible 2.3.3 desirable and undesirable 2.3.4 natural and man-made 2.4 solute, solvent, solution	<u>Changes around us</u> 2.1 Physical change 2.1.1 Crystallization 2.1.2 Melting 2.1.3 Evaporation 2.1.4 Freezing 2.1.5 Sublimation 2.1.6 Chemical change 2.1.7 Rusting of iron 2.1.8 Burning 2.2 Curdling 2.3 Chemical reaction of Baking Soda with lemon juice 2.5 Conditions needed for a chemical change 2.6 Indicators of a chemical change 2.7 Periodic and non-periodic change 2.8 Endothermic and Exothermic change 2.9 Fermentation	<u>Changes around us</u> 2.1 Chemical reactions based on 2.2 contact 2.3 solution of reactants, 2.4 Electricity 2.5 heat, 2.6 light, 2.7 catalyst 2.8 Effects of chemical reactions 2.9 heat, light, sound and pressure	-----	-----
<b>3. Air</b>	<u>Air</u> 3.1 Atmosphere 3.2 Composition of air 3.3 Importance of air for survival of plants and animals 3.4 Burning and	-----	<u>Air</u> 3.1 Oxygen, Carbon dioxide and Nitrogen 3.1.1 Occurrence 3.1.2 Physical and chemical properties 3.2 Nitrogen fixation	-----	-----

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
	combustion 3.5 Uses of air 3.6 Experimental verification of N <sub>2</sub> , CO <sub>2</sub> and O <sub>2</sub> in Air		3.3 Global warming 3.4 Acid rain		
<b>4. Water</b>	<u>Water</u> 4.1 Availability of water 4.2 Sources of water 4.3 Composition of water 4.4 Importance of water 4.5 Three states of water and inter conversions 4.6 Water vapour 4.7 water cycle		<u>Water</u> 4.1 Water 4.1.1 Composition 4.1.2 Determination 4.1.3 Preparation and Properties 4.2 Universal solvent 4.3 Potable water 4.4 Water pollution 4.5 Common pollutants 4.6 Controlling water pollution 4.7 Water treatment methods 4.8 Hardness of water 4.9 removal of hardness	-----	-----
<b>5. Atomic Structure</b>	-----	<u>Atomic Structure</u> 5.1 Structure of an atom 5.2 Sub-atomic particles and its properties 5.3 molecules, compounds mixture and its types 5.4 symbols	<u>Atomic Structure</u> 5.1 Laws of chemical combination 5.2 Various views of Atomic structure 5.2.1 John Dalton 5.2.2 J.J.Thomson 5.3 Cathode ray experiment 5.4 Limitation of	<u>Atomic Structure</u> 5.1 Discovery of nucleus Rutherford model of an atom - experiment, observation, conclusion and limitations. 5.2 Bohr's model of an atom 5.3 Postulates and limitations 5.4 Characteristics of	<u>Modern atomic theory</u> 5.1 Avogadro hypothesis and uses 5.2 -Vapor Density 5.3 -Relation between Vapor density and molecular mass 5.4 -Atoms and molecule-difference



Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
			Thomson model 5.5 Valence 5.6 Writing Molecular formula (Criss-cross method) 5.7 Ions 5.8 Types of ions 5.9 Different valent ions 5.10 Information conveyed by Molecular Formula 5.11 Reactants, products and balancing simple equations 5.12 Simple problems	fundamental particles Composition of nucleus 5.5 Atomic number & Mass Number 5.6 Isotopes, isobar, isotones, Electronic configuration of atoms, valence electrons and valence laws of chemical combination, reciprocal multiple proportion, law of combining volumes (Gay-Lussac's) 5.7 Introduction of Quantum Numbers	5.5 -Relative Atomic mass and molecular mass 5.6 -Mole Concept, problems 5.7 -Average atomic mass 5.8 Electronic Configuration: <i>s, p, d, f</i> Blocks 5.9 characteristics of <i>d</i> block and <i>f</i> block elements
<b>6. Acids, Bases and Salts</b>	-----	-----	<u><b>Acids and Bases</b></u> 6.1 Definition of acids and bases 6.2 Properties of Acids & Bases 6.3 Uses of Acids and Bases <b>in daily life</b> 6.4 Neutralization Reaction (definition only) 6.5 Natural indicators	<u>Acids, Bases and Salts</u> 6.1 -Types 6.2 Identification 6.3 Properties 6.4 uses 6.5 Aquaregia	-----
<b>7. Wastes and its Management</b>		<u><b>Wastes and its Management</b></u> 7.1 Synthetic fibers 7.1.1 Types and uses	-----	-----	-----

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
		7.2 Polymers 7.3 Plastics 7.3.1 Types and uses 7.3.2 Hazardness of Plastics 7.4 PLA Plastics 7.5 Various methods of disposing Plastics 7.6 Biodegradable plastics 7.7 Plastic eating Bacteria 7.8 Glass 7.8.1 Types and uses			
<b>8. Chemistry in Everyday life</b>	<b>Chemistry in Everyday life</b>	<b>Chemistry in Everyday life</b>	<b>Chemistry in Everyday life</b>	Carbon and its compounds	<b>Carbon and its compounds</b>
	8.1 Fertilizers 8.2 Cements 8.3 Gypsum / Epsom 8.4 Plaster of Paris 8.5 Soaps and Detergents 8.6 Phenol 8.7 - Adhesives	8.1 Medicines 8.1.1 Antibiotics 8.1.2 Analgesics 8.1.3 Antipyretic 8.1.4 Antiseptics 8.1.5 Antihistamine 8.1.6 Antacids / ORS 8.2 Combustion and its types 8.3 Flame and its structure 8.4 Fire control 8.5 Fire extinguishers	8.1 Hydrocarbons 8.2 Natural gas 8.3 Producer gas 8.4 Coal gas 8.5 Water gas 8.6 Bio gas 8.7 Coal and its types 8.8 Petroleum 8.9 Refining of petroleum 8.10 Characteristics of ideal fuel 8.11 Specific energy/Calorific value 8.12 Octane number 8.13 Cetane number 8.14 Solar energy as a non-depleting fuel 8.15 applications of solar	8.1 Introduction of carbon 8.2 Special features of carbon 8.3 Catenation 8.4 Multiple bond 8.5 Isomerism 8.6 Allotropy 8.7 Valency 8.8 Physical and chemical properties of carbon	8.1 Characteristics of organic compounds 8.2 Classification of organic Compounds 8.3 Homologous series 8.4 Nomenclature - rules for 8.5 writing IUPAC name 8.6 Hydrocarbon 8.6.1 Alkanes : $C_nH_{2n+2}$ 8.6.2 Alkenes : $C_nH_{2n}$ 8.6.3 Alkyne: $C_nH_{2n-2}$ 8.7 Carbonyl Compounds(Functional groups )Alcohol, Aldehyde, Ketone, Carboxylic acid, Ester, Ether 8.7.1 Preparation

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
			energy		8.7.2 Naming 8.7.3 Properties 8.7.4 Uses 8.8 preparation of ethanol and ethanoic acid 8.9 Corrosion 8.10 metallurgical process 8.11 Organic compounds in Daily life 8.12 Soap } 8.13 Detergent } Action 8.14 Comparison of Soap and detergent
9. Chemical Reaction	-----	-----	-----	<b>Chemical bonding</b>  <b>9.1 Bond - Definition</b> 9.1.1 Types of Bond 9.1.2 Octet rule 9.1.3 Lewis rule 9.1.4 Kossell rule <b>9.2 Formation of Ionic Bond</b> 9.2.1 NaCl, MgCl <sub>2</sub> , CO <sub>2</sub> <b>9.3 Formation of covalent bond</b> 9.3.1 Fajan's rule 9.3.2 -H <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , F <sub>2</sub> , Cl <sub>2</sub> , CH <sub>4</sub> 9.4 Differences between Ionic and Covalent bonds 9.5 Characteristics of Ionic and Covalent compounds. 9.6 Formation of coordinate	<b>Types of Chemical Reaction</b>  9.1 Combination – decomposition, double displacement Precipitation- neutralization- Reversible –Irreversible 9.2 - Equilibrium state 9.2.1 Rate of the chemical Reaction <b>9.3</b> -Factors influencing - 9.4 pH Scale : pH Paper 9.5 Role of pH in Ever daylife 9.6 pH-Calculation – <b>9.7</b> problems 9.8 Ionic product of water

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
				bond 9.6.1 Lewis concept 9.6.2 $\text{NH}_3 - \text{BF}_3$ 9.7 Oxidation, Reduction and Redox reaction, 9.8 Oxidation number 9.9 Problems on Determination of Oxidation number	
<b>10. Periodic classification of elements</b>	-----	-----	-----	<b><u>Periodic classification of elements</u></b> 10.1 Early concepts of classification of elements 10.1.1 Doberinar's Triads 10.1.2 New land law of octave 10.1.3 Mendeleev's octave table 10.1.4 Modern periodic table 10.2 Postulate, advantages and limitations 10.3 Classification - Metals non metals and metalloids 10.4 Alloys and uses classification based on modern table <i>s, p, d, f</i> and rare gases, 10.5 Position of hydrogen in periodic table	<b><u>Periodic classification of elements</u></b> 10.1 Modern periodic law 10.2 Period table characteristics of group and periods 10.3 Periodic trend in properties - Atomic radius Ionic radii ionization energy, electron affinity and electro negativity 10.4 Metallurgy 10.4.1 Introduction 10.4.2 terminology 10.4.3 Difference between ores and minerals 10.4.4 types of separation 10.4.5 Occurrence of minerals in Tamilnadu 10.4.6 properties of metal

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
					10.4.7 Metallurgical process 10.4.8 Metallurgy of Al,Cu and Fe, 10.4.9 Alloys - types and use 10.4.10 Amalgam 10.4.11 Corrosion 10.5 method preventing corrosion 10.6 (Pamban bridge painting)
<b>11. Applied Chemistry</b>	-----	-----	-----	11.1 Introduction of applied chemistry 11.2 Nano chemistry 11.3 Pharmaceutical chemistry 11.4 Electro chemistry 11.5 Radio Chemistry 11.6 Dye chemistry 11.7 Agricultural chemistry/Food Chemistry 11.8 Forensic chemistry 11.9 Definition, future application, Day today life, uses of Applied chemistry	-----

**State Council of Educational Research and Training, Chennai-6**

**Draft syllabus – Final**

**CLASS VI to X – Biology**

<b>Topic</b>	<b>STANDARD VI</b>	<b>STANDARD VII</b>	<b>STANDARD VIII</b>	<b>STANDARD IX</b>	<b>STANDARD X</b>
<b>1.Living world of Plants</b>	<p><b>1.2. The habitat of the living plants</b></p> <p>1.2.1.Habitat - <b>Types</b> aquatic, Terrestrial, deserts, mountains</p> <p>1.2.2. Plants adaptation and modifications of plants- tendrils, Climbers, thorns</p> <p><b>1.3. Plants – form and function</b></p> <p>1.3.1.Morphological structure and function of root, stem and leaves</p>	<p>1.1 Characteristics of living things</p> <p>1.2 Habitat – Aquatic and Terrestrial plants</p> <p>1.3 Herbs, shrubs and trees</p> <p>1.4 Parts of plants - Root, stem, leaves and flowers Reproduction in plants, Pollination, Types of Pollination, Pollinators, Fertilization</p> <p>1.5 Modification of roots, stems, leaves</p> <p>1.6 Kinds of stems</p>	<p><b>Plant Kingdom</b></p> <p>1.1 Binomial nomenclature</p> <p>1.2 Bentham and Hooker. system of Classification</p> <p>1.3 Algae</p> <p>1.4 Fungi</p> <p>1.5 Bryophytes</p> <p>1.6 Pteridophytes</p> <p>1.7 Gymnosperms</p> <p>1.8 Angiosperms</p> <p>1.9 Monocotyledons</p> <p>1.10 Dicotyledons</p> <p>1.11 Medicinal plants</p>	<p><b>Movements in plants</b></p> <p>Introduction</p> <p>Types of movements in plants with Experiments</p> <p>1.1 Tropic movements</p> <p>1.2 Phototropism</p> <p>1.3 Geotropism</p> <p>1.4 Hydrotropism</p> <p>1.5 Nastic movements – types thigmonasty, photonasty, thermonasty.</p> <p>Photosynthesis in plants</p> <p>Transpiration in Plants</p>	<p><b>Plant Anatomy</b></p> <p>Introduction</p> <p>Structure of root(T.S)</p> <p>Structure of stem(T.S)</p> <p>Structure of leaf. (T.S)</p> <p><b>Plant Physiology</b></p> <p>Structure and function of chloroplast and mitochondria</p> <p>1. Photosynthesis</p> <p>2. Respiration</p> <p>3. Transpiration</p>
<b>2. Living World</b>	<b>1. Bio Diversity</b>	<b>Basis of</b>	<b>Micro</b>	<b>Diversity in living organism</b>	<b>Type study-</b>

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
of Animals	2.1 Unicellular and multi cellular organisms 2.2 Variations between body and shape e.g. Fish, lizard and birds 2.3 different adaptation of Animals E.g. Camel	<b>Classification</b>  2.1 Need for classification 2.2 The 5 kingdom classification 2.3 Binomial Nomenclature (Introduction)	<b>Organisms</b>  2.1 Virus, bacteria, algae, fungi and protozoa. 2.2 Uses of microorganisms in medicine, agriculture, industry and daily life 2.3 Harmful microorganisms 2.4 Microbes in food process. 2.5 Relationship between man and microbes – Balances, imbalances and uses. 2.6 Effect of Prions and virions on Human	<b>Animalia</b>  <b>Invertebrata</b> <ul style="list-style-type: none"> <li>- Protozoa</li> <li>- Porifera</li> <li>- Coelenterata</li> <li>- Platyhelminthes</li> <li>- Nematoda</li> <li>- Annelida</li> <li>- Arthropoda</li> <li>- Mollusca</li> <li>- Echinodermata</li> <li>- Prochordata</li> </ul> <b>Vertebrata</b> <ul style="list-style-type: none"> <li>- Pisces</li> <li>- Amphibia</li> <li>- Reptilia</li> <li>- Aves</li> <li>- Mammalia</li> </ul> 2-3 specific characters  <b>Table</b> <ul style="list-style-type: none"> <li>- Nomenclature of animals (Binomial names)</li> </ul>	<b>Invertebrata,</b>  <b>Vertebrata</b>

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
<b>3. Health and Hygiene</b>	<b>3.1 Components of Food</b> 3.2.1 Nutrients(carbohydrates, proteins, fats, vitamins and minerals) 3.2.2 Health and Nutrients,Balanced diet, Malnutrition,Physical exercise and rest 3.2.3 Personal cleanliness (Introduction for Bacteria and Virus) 3.2.4. Importance of Balanced diet 3.2.5. Deficiency and its diseases	Test for Starch, protein and Fat  Taking care of our body 3.1 taking care of our teeth, our eyes , hair 3.2 hygienic habits 3.3 communicable diseases (Bacteria and Virus) Any 3 3.4 safety and first aid (cuts and burns)	<b>Reaching the Age of Adolescence</b>  3.1 Adolescence and puberty 3.2 Secondary sexual characters 3.3 Role of hormones in reproduction 3.4 Reproductive phase of life in human 3.5 Menstrual Cycle 3.6 Reproductive Health 3.7 Nutritional needs for Adolescence 3.8 Personal hygiene for Adolescence	<b>Food for Living world</b>  3.1 Methods of preservation of food - food and some common adulteration - ISI, AGMARK, FPO,FCI (Soft drinks, packed foods, frozen foods) 3.2 Deficiency diseases 3.3 (Tabular column) Deficiency disorders their causes and symptoms along with sources	<b>Prevention and protection</b>  3.1 sexual and other abuses 3.2 Smoking hazards. 3.3 Cancer and Prevention(Smoking, tobacco, alcohol) 3.4 Drugs and De-addiction 3.5 Diseases, Disorders and preventing Diabetes and its types 3.6 Heart disease, 3.7 Obesity 3.8 AIDS – causes , prevention and awareness
<b>4. Organization in Organisms</b>	4. Organ systems of human body 4.1. Introduction to various systems 4.2 The skeletal system 4.3 The muscle system 4.4 The circulatory system 4.5 The respiratory system 4.6 The digestive system	<b>Human Body – Form &amp; Function</b>  4.1 Introduction of human organ systems and functions 4.2 The body and health as understood in the Indian system health care	<b>Movements</b>  4.1 Movements of animals (Earthworm, cockroach, birds, fish and snakes) 4.2 Human body and its movements 4.3 Joints and types of joints 4.4 Skeleton 4.5 Muscles movement and	<b>Organs and their systems in animals</b>  <b>Digestive system in human</b>  4.1 Organs 4.2 Alimentary canal of man 4.3 Digestive enzymes chart	4.1 Nervous system 4.2 Introduction- Generation of impulses - neurotransmitter - Nerve fiber - Central Nervous system(CNS) 4.3 Structure of Brain and spinal cord



Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
	4.7 The nervous system 4.8 The excretory system 4.9 The sensory system 4.10 The endocrine system		types	Excretory system in human <ul style="list-style-type: none"> <li>○ Skin</li> <li>○ Kidneys</li> <li>○ Structure of Nephron</li> <li>○ Urine formation</li> </ul> Reproductive system in human <ul style="list-style-type: none"> <li>● male</li> <li>● Female</li> </ul>	4.4 Cerebro spinal fluid (CSF) 4.5 Reflex action 4.6 Peripheral nervous system 4.7 Autonomic nervous system
<b>5 .Life Process</b>	<b>Structural Organization of A Cell</b>  5.1 The cell 5.2 Types of cells	<b>Functional Units of life</b>  5.1 Plant and animal cell comparison 5.2 Cell as a fundamental unit of life – 5.3 Human cells related to functions. 5.4 Structure and function of all cell organelles (in brief.)	<b>Organization of Life</b>  5.1 Organization-- cells – tissues – organs – organ system. 5.2 Diffusion, osmosis and osmoregulation 5.3 Homeostasis. 5.4 Design of the body –based on function – some examples. 5.5 Cellular respiration. 5.6 Metabolism	<b>Plant tissues</b>  5.1 Meristematic tissues and its types 5.2 Permanent, simple and complex tissues 5.3 Simple – Parenchyma, Collenchyma, Sclerenchyma  <b>Types and their functions</b> <ul style="list-style-type: none"> <li>● Complex tissue - Xylem and phloem (T.S., L.S)</li> </ul> <b>Types and their functions</b> <ul style="list-style-type: none"> <li>- Animal tissues               <ul style="list-style-type: none"> <li>○ Epithelial tissues</li> <li>○ Connective tissues</li> <li>○ Muscular tissues</li> <li>○ Nervous tissues</li> </ul> </li> <li>- Cell division - Types - Amitosis, mitosis,</li> </ul>	<b>Heredity and Evolution</b>  <b>Mendel's experiments</b>  5.1 History of Mendel 5.2 Monohybrid cross 5.3 Dihybrid cross 5.4 Mendelian laws 5.5 Structure and types of chromosomes - karyotype of man - Syndrome 5.6 Structure replication and significance of DNA 5.7 Sex determination in Human beings- Variation and Mutation 5.8 Theories special creations of Evolution - Lamarckism

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
				meiosis	5.9 Darwinism – 5.10 Evidences for Evolution 5.11 Paleo botany 5.12 Ethnobotany 5.13 Astrobiology 5.14 Exobiology (only introduction)
<b>6. Environmental Science – Resource use and Management</b>	<b>Our Environment</b> 6.1. Ecosystem - Aquatic, terrestrial - food chain Recycling of waste – 6.2. Bio degradable and non bio degradable 6.3. 3R cycle 6.4. Pollution - 6.5 Types of pollution – Air, water, land and noise pollution	<b>Water –A Precious Resource</b> 6.1 Availability of water 6.2 Sources of water 6.3 Forms of water 6.4 Ground water 6.5 Depletion of water 6.6 Distribution of water 6.7 Scarcity of water 6.8 Water management- 6.8.1 Rain water harvesting 6.8.2 Desalination of	<b>Conservation of Plants and Animals</b> 6.1 Deforestation and afforestation & reforestation 6.2 Endangered species 6.3 Red data book 6.4 Wildlife sanctuary and National parks 6.5 In-situ, Ex-situ Conservation 6.6 PBR (Peoples Bio diversity Register) 6.7 Bio Magnification 6.8 PETA, Blue Cross, CPCSEA	<b>Environmental Biology</b> 6.1 Biogeochemical cycle a. -Carbon b. -Water c. -Nitrogen 6.2 Adaptations of plant a. -Xerophytes b. -Mesophytes c. -Hydrophytes 6.3 Adaptation of Animals to temperature, light and habitat – E.g. Bat, Eathworm 6.4 Farm ponds 6.5 Water Conservation 6.6 Recycling of water 6.7 IUCN	<b>Environmental management</b> 6.1 Conservation and judicious use of resources 6.2 Forest 6.3 Wild life 6.4 Soil (erosion) 6.5 Renewable and non-renewable energy 6.6 Fossil fuels 6.7 Solar energy 6.8 Bio gas/ Shale gas 6.9 Wind, water and tidal energy 6.10 Rain water harvesting 6.11 Coal and Petroleum 6.12 Electrical energy Management 6.13 e-waste management 6.14 Sewage Management 6.15 Solid

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
		sea water (R.O)			wasteManagement
<b>7. Economic Biology</b>	7.1 Plants as Food 7.2 Fiber yielding plants 7.3 Ornamental plants 7.4 Timber yielding plants 7.5 Medicinal plants 7.6 Spices 7.7 Interrelationship between plants and animals	<b>1: Animals in Daily Life</b> 7.1 Animal products (Food, Clothing, ) 7.2 Animal Fibers(wool, silk) 7.3 Hazards in silk and wool industries (ANTHRAX) 7.4 Sericulture and Ahimsha/Peace silk 7.5 Poultry farming 7.6 Animal protection and maintenance	<b>1.Crop Protection and Management</b> 7.1 Agricultural practices 7.2 Basic practices of crop protection 7.3 Preparation of soil and sowing 7.4 Irrigation 7.5 Weed Management 7.6 Harvesting Modern equipments 7.7 Storage 7.8 Rotation of crops 7.9 Seed Bank,Seed Balls,Preservation of Seeds, Heirloom Seed 7.10Bio indicators List of Agricultural Reasearch Institutions- IARI, ICAR,KVK 7.11 FOLIAR SPRAYS (EM, Vermiw ash, panchgavya) 7.12 Bio Predators /Bio pesticides, Bio repellants and Biofertilizer	<b>Applied Biology</b> 7.1 Introduction 7.2 Medicinal plants - uses (phyto chemistry) 7.3 Horticulture 7.4 Hydroponics 7.5 Aquaponics 7.6 Aeroponics 7.7 Manuring (Bio - Manuring) 7.8 Dairy farming 7.9 Aquaculture 7.10 Pisciculture 7.11 Prawn culture 7.12 Vermi-technology 7.13 Apiculture 7.14 Mushroom culture (Butter) 7.15 Floriculture 7.16 vegetable farming	<b>Breedinginplants and animals</b> <b>Introduction</b> 7.1 Selection of crop (types with techniques) crop varieties and improvement, crop production improvement and management 7.2 Polyploidy - Types 7.2.1 Induced Mutation 7.2.2 Hybrid - Hybridization plant (one hybridization Experiment) 7.3 Animal Breeding 7.3.1 Inbreeding 7.3.2 Outbreeding 7.3.3 Heterosis 7.4 Biotechnology in Medicine 7.5 Genetic Engineering - Cloning - stem cell - DNA Finger printing technology, GMO (Genetically modified organisms)
<b>8. World of Microbes</b>	----	----	----	<b>Introduction:</b> <b>8.1</b> Microbes and their types - Prions, Bacteria, Viruses, Fungi <b>8.2</b> Applications of Microbes in	

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
				agriculture, industries medicine, Biological scavengers. 8.3 Harmful effect of microbes diseases - endemic, epidemic - pandemic 8.4 Water borne diseases 8.5 Air borne diseases 8.6 Vector borne diseases 8.7 Chikungunya, Dengue, Bird flu, swine flu 8.8 Syphilis, Gonorrhea, Genital warts, Genital, herpes, Hepatitis - B, AIDS Immunization Schedule	
9.Circulation and Transportation					Circulation in animal  9.1 Heart and blood vessels 9.2 Types - Arteries - veins 9.3 Blood composition and its function 9.4 Cardiac cycle – 9.5 types of circulation 9.6 Heart beat 9.7 Blood pressure – stethoscope and sphygmomanometer 9.8 Blood groups and blood donation

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
					9.9 Lymphatic system <b>Transportation in plants</b> 9.10 Absorption and transport of water - Root hair - Root pressure - osmosis 9.11 Transport of food, minerals and water 9.12 Transpiration 9.13 Translocation 9.14 Ascent of sap
10.Hormones					<b>Introduction</b> 10.1 Plant Hormones & their uses 10.1.1 Auxin 10.1.2 Cytokinin 10.1.3 Gibberellin 10.1.4 Abscisic acid 10.1.5 Ethylene 10.1.6 Vent experiment 10.2 Endocrine glands - <b>Introduction</b> 10.2.1 Pituitary gland 10.2.2 Thyroid gland 10.2.3 Para Thyroid gland 10.2.4 Pancreas 10.2.5 Adrenal gland

Topic	STANDARD VI	STANDARD VII	STANDARD VIII	STANDARD IX	STANDARD X
					10.2.6 Thymus 10.2.7 Testes 10.2.8 Ovaries
<b>11. Reproduction</b>					11.1 Introduction 11.2 Asexual reproduction 11.2.1 Fragmentation 11.2.2 Fission 11.2.3 Budding 11.2.4 Regeneration 11.2.5 Spore formation  11.3 Sexual reproduction 11.4 Sexual reproduction in a typical flowering plant  Parts of flowers  Process of reproduction - Pollination and - Fertilization Sexual reproduction in human Male reproductive system Female reproductive system  Reproductive health  - Family planning - Women's Health UTI, (Toilet hygiene, napkin hygiene, washing Procedure)

