

SYLLABUS FOR ALL CATEGORIES

1. SYLLABUS FOR RELIGIOUS TEACHERS GENERAL AWARENESS

(a). **Geography of India Sub-Continent.**

- (i) Geographic regions & its implications.
- (ii) Climatic conditions. (iii) Environment. (iv) Vegetation.
- (v) Wild life conservation.

(b) **Resources (Concept and their Impact)**

- (i) Land and Water. (ii) Minerals. (iii) Agriculture.
- (iv) Industrial Development. (v) Trade & Commerce.
- (vi) Transportation and Communication.

(c). **Indian History.** Facts, progress/development, causes of success and failures of various imp events, Impact on Indian subcontinent and society pertaining to the following period :-

- (a) Ancient Period (3000 BC-700 AD).
- (b) Medieval Period (700 AD-1700 AD).
- (c) Period Under East India Company (1700 AD-1947).
- (d) Modern India.

(d). **Culture and Cultural Heritage of India.**

- (a) Indian Constitution. (b) Fundamental Rights.
- (c) Society and the Nation. (d) Challenges of Indian Democracy.
- (e) Problems in our society. (f) National Integration.
- (g) Economy of India.

(e). **Current Affairs.**

(a) **National**

- (i) Modern/Recent Development. (ii) Defense.
- (iii) Foreign Policy. (iv) Art, Science and Culture
- (v) Sports. (vi) Political Events. (vii) Latest Events.

(b) **International**

- (i) United Nations. (ii) Neighboring countries of India.
- (iii) Current Problems at International level.
- (iv) Art, Science & Culture. (v) Sports. (vi) Latest Events.

2. SYLLABUS FOR RELIGIOUS TEACHERS RESPECTIVE RELIGIONS

(a) **Hinduism**

(i) **Rituals.**

- (a) Nam Karan. (b) Yagyopavit.
- (c) Vivah (Marriage). (d) Antyesti. (e) Grah Shanti Evam Havan.

(ii). **Scriptures of Hinduism.** Scriptures of Hinduism for example Ram Charit Manas, Gita, Upanishad, Maha Bharat, Purans etc.

(iii). **Discourses.** National/Regional Festivals of the country.

(iv). **Motivation.** The question paper on Motivation will be same for all religions. This will incl :-

- (a) Motivation on Good Citizenship – Values and Morals.
- (b) Motivation on Good Soldiering-Personality Development and Character.
- (c) Motivation on Service Before Self. (d) Motivation on Sportsmanship.
- (e) Motivation in the Times of War / Operation.
- (f) Counseling on Addiction and De-Addiction.
- (g) Counseling of Sick Persons. (h) Counseling of Prisoners.
- (j) Counseling on Family Relationship. (k) Counseling on Children.

(b) **Islam**

(i). **Rituals.**

- (a) Janam Sanskar. (b) Khatna, Aaphiqa.
- (c) Vivah Sanskar. (d) Antim Sanskar.

(ii). **Scriptures.** Scriptures of Islam for example Holy Quraan and Hadees etc.

(iii). **Discourses.** National/Regional Festivals to include the following :-

- (a) Id-UI-Fitar. (b) Id-UI-Juha. (c) Id-UI-Milad.
- (d) Muharram. (e) Shab-e-Qadar. (f) Shab-e-Barat.

(c) **Sikhism**

(i). **Rituals.**

- (a) Nam Karan. (b) Amrit Pan. (c) Anand Karaj. (d) Antyesti.

(ii). **Scriptures.** Scriptures of Sikhism for example Guru Granth Sahib, Dasham Granth and Vara Bhai Gurudas Ji etc.

(iii). **Discourses.** National/Regional Festivals to include the following :-

- (a) Janmdin Guru Nanak Ji. (b) Janmdin Guru Govind Singh Ji.
- (c) Shahidi Divas Guru Arjun Dev Ji.
- (d) Shahidi Divas Guru Teg Bahadue Ji.
- (e) Baisakhi (Khalsa Panth Sthapana Divas)
- (f) Shahidi Barhe Sahab Zade. (g) Shahidi Chhote Sahab Zade.
- (h) Prakash Divas Guru Granth Sahib. (j) Guru Gaddi Divas.

(d) **Christianity**

(i). **Rituals (Holy Sacraments).**

- (a) Baptism. (b) Holy Communion. (c) Child Dedication.
- (d) Confirmation. (e) Holy Matrimony. (f) Funeral.

(ii). **Holy Scriptures.** Holy Scriptures of Christianity, for example Old Testament and New Testament etc.

(iii). **Discourses.** National/Regional Festivals to include the following :-

(a) Christmas. (b) Palm Sunday. (c) Good Friday.

(d) Easter. (e) Ascension. (f) Pentecost.

(e) **Buddhism**

(i). **Rituals**

(a) Nam Karan. (b) Vivah (Marriage). (c) Antyesti. (d) Dixha Sanskar.

(ii). **Scriptures.** Scriptures of Budhism for example Vinay Pitak, Sutt Pitak and Abhidhamm Pitak etc.

(iii). **Discourses.** National/Regional Festivals to include the following :-

(a) Char Arya Satya. (b) Asht Marg. (c) Buddh Purnima.

(d) Pera Hera. (e) Qaza. (f) Buddh Dharm Ka Darshan.

3. **SYLLABUS FOR SOLDIER CLERK/SKT (GENERAL KNOWLEDGE)**

(a). **Abbreviations** - National and International.

(b). **Sports** - National and International.

(c). **Awards & Prizes** - National awards, Gallantry awards, Nobel Prizes.

(d). **History** - Important dates & battles in Indian and World History and land marks of Indian History, national movement.

(e). **Geography** - Solar System Space exploration, The earth principal peaks, Deserts, Rivers, Lakes and famous waterfalls, Geographical Tallest, Biggest and Longest etc.

(f). **Terminology** - Geographical terms, Economic terms, Astronomical terms, Legal terms and Misc terms.

(g). UNO (j). Indian Armed Forces. (k). Indian Towns, States and Uts.

(l). Institutions and Research Stations, International space Stations and Festivals of India and World.

(m). Indian News Agencies and Dailies. (n). Continents and Sub Continents.

(o). Inventions and Discoveries. (p). Environment.

(q). The Constitution of India.

(r). Religious communities and Principal Languages.

(s). National and International Days. (t). International Organizations.

(u). Books and Authors. (v). The world of Plants and animals.

(w). Current Affairs and "Who's Who".

4. **GENERAL SCIENCE**

(a). **Human Body** - Food and nutrition, diseases and prevention, vitamins and their uses. Question of General Science consisting of topic related to Physics, Chemistry and Biology. based on fundamentals and day to day activities, Medical Terms, Scientific Terms, Scientific and Research Institutes in India.

(b). **IO/Numeral** : Ability The questions will be based on the ability of the candidates of age group ranging between 16 & 20 years.

Note The above syllabus is not a comprehensive list of topics pertaining to the subject. At times questions may be asked other than the above topics but definitely within the syllabus of CBSE.

5. **MATHS**

(a). **Arithmetic:** Natural numbers, integers, fractions, rational/irrational numbers, decimal fractions, HCF & LCM, square root, ratio and proportion, percentages, averages, profit & loss, simple and compound interest.

(b). **Algebra:** Addition, subtraction, multiplication and division of algebraic expressions, HCF & LCM, factorisation, simple equations, surds, indices, logarithms, Solution of linear equations of two and three variables.

Ratio and proportion meaning and standard form, roots and discriminant of a quadratic equation $ax^2 + bx + c = 0$;

(c). **Mensuration**

(i). **Area and Volume:** Area of four walls of a room, area of a circle, sector and segment of a circle; surface area and volume of cube, cuboids cone, cylinder, sphere.

(ii). **Trigonometry:** Trigonometric ratios of an angle A of a right angle triangle, Simple applications of trigonometric ratios for solving problems of different types, Simple identities based upon the above.

(iii). **Heights and Distances:** Solution of simple problems of height and distance using trigonometrically tables and logarithmic tables.

(d). **Geometry Lines and Angles:** Different characteristics of lines and angles, parallel and perpendicular lines, intersecting lines, some of angles and triangles, interior and exterior angles. Triangles-properties, equality, congruency and similarity with respect to sides and angles. Parallelogram-types and properties. Circles – Properties, arc, chords, tangents, secants and angles subtended by arcs.

(e). **Statistics:** Histograms with given intervals, classification of data, frequency, frequency polygons, ogives. Mean, median and mode of grouped and ungrouped data, problems related to statistical techniques.

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6. **COMPUTER**

(a). **Computer System :** Characteristics of a computer, Basic applications of a computer, Components of a computer system – Central Processing unit (CPU), Visual Display Unit (VDU), Keyboard.

(b). **Concept of Memory:** Primary and Secondary Memory, RAM and ROM, Units of Memory – Byte, Kilobyte, Megabyte, Gigabyte, Terabyte.

(c). **Input / Output Devices:** Mouse, Joy Stick, Scanner, Microphone, OCR, MICR, Light pen, Bar code Reader, Digital Camera, Printer, Speaker, Plotter. Booting procedure and Storage Devices

(d). **MS –Windows :** Basic concept of an Operating System and its functions.

(e). **Introduction to Windows :** Using Mouse and moving icons on the screen, My computer, Recycle Bin, Task Bar, Start0menu and menu selection, running an application, setting system date and time, Windows Explorer to view files, folders and directories, creating and renaming of files and folders, Opening and Closing of Windows Minimise, Restore and Maximise forms of windows, Basic components of a Window : Desktop, Frame, Title Bar, Menu Bar, Status Bar, Scroll Bars (Horizontal and Vertical), Using right button of the Mouse, Creating Shortcut, Basic Windows, Accessories : Notepad, Paint, Calculator, Wordpad.

(f). **MS Word:** Introduction to a Word Processor, Creating and Saving a Document, Editing and Formatting a Document ; Text Style (B.I.U), Font Type, Size, changing colour, alignment of text ; Formatting paragraphs with line or paragraph spacing ; adding headers and footers, numbering pages, using grammar and spell utilities, using subscript and superscript, inserting symbols, Print Preview, Printing a document, Inserting WordArt, Clipart and Pictures, Page setting, Bullets and Numbering, Borders and Shading, Format painter, Find and Replace, Inserting Tables: inserting, deleting-rows and columns, merging cells, splitting cells, using auto format.

(g). **MS Power Point:** Introduction to presentation Graphics, understanding the concept of slides shows, Basic elements of a slide, Different types of slide Layouts, Creating and saving a presentation, Different views of a slide : Normal view, Slide Sorter view and Slide Show, Editing and Formatting a slide : Adding Titles, Subtitles, Text, Background, Watermark; Headers and Footers, Numbering Slides.

(h). **MS Excel:** Introduction to Spreadsheets, Concept of Worksheets and workbooks, Creating and Saving a worksheet, Working with a spreadsheet: entering numbers, text, date/time, series using Auto Fill, Editing and formatting a worksheet including changing colour, size, font, alignment of text, inserting or deleting cells, rows and columns.

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7. **ENGLISH COMPREHENSION GRAMMAR**

(a). **Parts of Speech.**

- | | | |
|-------------------|-----------------------------|------------------|
| (i) Article | (ii) Noun and Pronoun. | (iii) Adjective. |
| (iv) Preposition. | (v) Conjunction and modals. | |

(b). **Verbs**

(c). **Tenses**

- | | |
|-------------------------|------------------------------|
| (i). Present/past forms | (ii). Simple/continuous form |
| (iii). Prefect forms | (iv). future time reference |

(d). **Sentence Structure**

(e). **Type of Sentences**

- | | |
|---|--------------------------------|
| (i). Affirmative/interrogative sentences. | (ii). Use of Phrases. |
| (iii). Direct and Indirect speech. | (iv). Active and Passive Voice |

(f). **Other Areas**

- | | | |
|-------------------------|-----------------------------|------------------------------|
| (i) Idioms and Phrases. | (ii) Synonyms and antonyms. | (iii) One word substitution. |
|-------------------------|-----------------------------|------------------------------|

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8. **SYLLABUS FOR SOLDIER GENERAL DUTY (GENERAL KNOWLEDGE)**

- (a). **Abbreviations** - National and International.
 (b). **Sports** - National and International.
 (c). **Awards & Prizes** - National awards, Gallantry awards, Nobel Prizes.
 (d). **History** - Important dates & battles in Indian and World History and land marks of Indian History, national movement.
 (e). **Geography** - Solar System Space exploration, The earth principal peaks, Deserts, Rivers, Lakes and famous waterfalls, Geographical Tallest, Biggest and Longest etc.
 (f). **Terminology** - Geographical terms, Economic terms, Astronomical terms, Legal terms and Misc terms.
 (g). **UNO** (j). Indian Armed Forces. (k). Indian Towns, States and Uts.
 (l). Institutions and Research Stations, International space Stations and Festivals of India and World.
 (m). Indian News Agencies and Dailies. (n). Continents and Sub Continents.
 (o). Inventions and Discoveries. (p). Environment.
 (q). The Constitution of India.
 (r). Religious communities and Principal Languages.
 (s). National and International Days. (t). International Organizations.
 (u). Books and Authors. (v). The world of Plants and animals.
 (w). Current Affairs and "Who's Who".

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9. **GENERAL SCIENCE**

(a). **Human Body** - Food and nutrition, diseases and prevention, vitamins and their uses. Question of General Science consisting of topic related to Physics, Chemistry and Biology. based on fundamentals and day to day activities. Medical Terms. Scientific Terms. Scientific and Research Institutes in India.

(b). **IO/Numeral Ability.** The questions will be based on the ability of the candidates of age group ranging between 16 & 20 years.

10. **MATHEMATICS**

(a). **Arithmetic:** Consisting of numbers, HCF, LCM, Decimal fraction, square roots, percentage, Average, Ratio and proportion, partnership, profit & loss, unitary method, time work and distance, simple interest.

(b). **Algebra:** Basic operations and factorization, HCF and LCM, quadratic equations.

(c). **Geometry:** Lines and angles, triangles quadrilaterals, parallelograms and circles

(d). **Mensuration:** Area and perimeters of Squares, rectangles parallelograms and circles, volume and surface area of cube, cuboids, cone, cylinders and sphere.

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11. SYLLABUS FOR NURSING ASSISTANT (GENERAL KNOWLEDGE)

- (a). **Abbreviations** - National and International.
 (b). **Sports** - National and International.
 (c). **Awards & Prizes** - National awards, Gallantry awards, Nobel Prizes.
 (d). **History** - Important dates & battles in Indian and World History and land marks of Indian History, national movement.
 (e). **Geography** - Solar System Space exploration, The earth principal peaks, Deserts, Rivers, Lakes and famous waterfalls, Geographical Tallest, Biggest and Longest etc.
 (f). **Terminology** - Geographical terms, Economic terms, Astronomical terms, Legal terms and Misc terms.
 (g). **UNO** (j). Indian Armed Forces. (k). Indian Towns, States and Uts.
 (l). Institutions and Research Stations, International space Stations and Festivals of India and World.
 (m). Indian News Agencies and Dailies. (n). Continents and Sub Continents.
 (o). Inventions and Discoveries. (p). Environment.
 (q). The Constitution of India.
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 (s). National and International Days. (t). International Organizations.
 (u). Books and Authors. (v). The world of Plants and animals.
 (w). Current Affairs and "Who's Who".

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12. MATHS

- (a). **Arithmetic:** Natural numbers, integers, fractions, rational/irrational numbers, decimal fractions, HCF & LCM, square root, ratio and proportion, percentages, averages, profit & loss, simple and compound interest.
 (b). **Algebra:** Addition, subtraction, multiplication and division of algebraic expressions, HCF & LCM, factorisation, simple equations, surds, indices, logarithms, Solution of linear equations of two and three variables.
 Ratio and proportion meaning and standard form, roots and discriminant of a quadratic equation $ax^2 + bx + c = 0$;

(c). Mensuration

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13. BIOLOGY

- (a). **Basic Biology:** Cells structure and functions, tissues, organs and organ system, outline classifications of plants and animals, adaptation and evolution.
 (b). **Life Process:** Nutrition -photosynthesis, autotrophs, heterotrophs, Respiration. Internal transport, Excretion, Reproduction. Growth and differentiation. Control and co-ordination.

- (c). **Study of Birds:** Habit and behaviour of familiar birds.
- (d). **Human Beings**
- (i). **Uniqueness of human body:** Organisation of human body, unique organs of the human body – biped and erect posture, opposite thumb, highly developed brain, location of eye, colour sensitive retina, presence of salivary amylase, antigravity postural muscles, location tests, capability of year round reproduction, some characteristics of human body common to other animals.
- (e). **Food and Health**
- (i). **Necessity of balanced diet** Diet and nature of work, need and carbohydrates and fats, vitamins, minerals, sources of dietary proteins, carbohydrates and fats, vitamins, minerals. Deficiency diseases and their symptoms –protein energy malnutrition, mineral malnutrition, Symptoms of diseases, effects of insufficiency, control Harmful effects of over intake, obesity, and other complications, cardiovascular disorder, motiling of teeth and fluorosis, hypervitaminosis.
- (f). **Wasteful Food Practices** Types of wastage, defective practices post harvesting, mode of storage and distribution, traditional systems, faulty methods of preservation.
- (g). **Food Yield** Different practices –use of fertilizers and manures, proper irrigation, nitrogen fixation, crop rotation, mixed cropping, use of good hybrids, protection of plants against diseases. Animal husbandry, artificial insemination , care and management. Environmental pollutants, contaminated water, causes and transmission by physical contact or vectors. Disorder caused by addiction to alcohol, smoking and drugs.
- (h). **Essentials for good health** Hygienic habits and control of environmental pollution.
- (i). **Cycles of materials** Carbon cycle, nitrogen cycle, nitrogen fixation, oxygen cycle, oxidation processes, water cycle, mineral cycles (Na K. Mg. Fe) Role of energy change in different cycles.
- (j). **Ecological balance** Man’s role in disturbing the balance, environment physical, biotic and socio-culture, efforts for maintenance of ecological balance, recycling of waste materials for ecological balance.
- (k). **Living resources** Renewable and non-renewable resources, exploitation of resources, ecological crisis due to deforestation, need for proper replacement and management of living resources, means of replenishment through sulviculture, conservation and monitoring of wild life parks and sanctuaries, wild life conservation.
- (l). **Ways of living**
- (i). **Habitat and Organisms** Habitat. Types of habitat: classification of organisms based on habitats, habitat and organisms, interdependent alternation of habitats and its effects on organisms including man conservation of habitats.
- (ii). **Adaptation** Structural and functional potentialities of organisms, structure adaptation with reference to internal and external factors, Functional adaptation in reference to life processes.
- (iii). **Study of Birds** Habit and behaviour of familiar birds.

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14. **CHEMISTRY**(a). **Matter-Nature and Behaviour**

(i). **Nature and behavior:** Different types of substances, elements, compounds and their mixtures, Structure of matter. Atomic theory, molecules and atoms; Structure of atom-electrons, protons and neutrons, Composition of nucleus – atomic number and mass number, Valence electrons and valency.

Preparation and properties of Hydrogen, Oxygen, Nitrogen and Carbon-di-oxide.
Oxidation and Reduction, Acid, bases and salts.

(ii). **Electrochemical cell:** construction of a simple voltaic cell; working of an electrochemical cell; lead storage battery and dry cell.

(iii). **Classification of elements:** Similarities and dissimilarities in the properties of some elements. Periodic law, periods and groups, gradation of properties of elements along a period and in the groups.

(iv). **Carbon and its compounds:** Introduction, allotropies of carbon and their occurrence, structure, related property and uses. Hydrocarbon and their elementary structure, related property and uses, simple compounds of carbon, hydrogen and oxygen and their uses. Petroleum products, introductory account of synthetic fibres, plastics, rubber, soaps and detergents.

(v). **Extraction of metals:** Metals and non-metals; occurrence, general metallurgical operations for extraction of pure metal, properties of metals and some alloys, uses of metals and non-metals, their compounds.

(vi). **Chemical bond:** Formation of ionic and covalent bonds, important properties of electrovalent and covalent compounds.

(vii). **Electrolysis:** Movement of ions during electrolysis; relationship between current, time and amount of metal deposited during electrolysis; electroplating.

(b). **Natural Resources**

(i). **Water:** Water as a natural resources, origin of life in water as medium for the activity of the living, water as solvent, saturated and unsaturated solution, sea water as habitat of organism, salts from oceans, ocean current, use of water Dependence of man on natural resources – minerals from earth metals and non-metals, use of non metals.

(ii). **Air:** Role of atmosphere in protection from radiation, composition of atmosphere, water and particulate matter in atmosphere, carbon dioxide and its adverse effect on living organisms, role of trees, release of carbon dioxide from fossil fuels and automobiles, corrosion of metals, damage of historical monuments from acidic gases, toxic effects of metallic particles, asbestos etc on living organisms carbon monoxide and its ill effects, smog, air pollution noise pollution and its effects on human beings.

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15. **SYLLABUS FOR SOLDIER TECHNICAL(GENERAL KNOWLEDGE)**

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- (d). **History** - Important dates & battles in Indian and World History and land marks of Indian History, national movement.
- (e). **Geography** - Solar System Space exploration, The earth principal peaks, Deserts, Rivers, Lakes and famous waterfalls, Geographical Tallest, Biggest and Longest etc.
- (f). **Terminology** - Geographical terms, Economic terms, Astronomical terms, Legal terms and Misc terms.
- (g). UNO (j). Indian Armed Forces. (k). Indian Towns, States and Uts.
- (l). Institutions and Research Stations, International space Stations and Festivals of India and World.
- (m). Indian News Agencies and Dailies. (n). Continents and Sub Continents.
- (o). Inventions and Discoveries. (p). Environment.
- (q). The Constitution of India.
- (r). Religious communities and Principal Languages.
- (s). National and International Days. (t). International Organizations.
- (u). Books and Authors. (v). The world of Plants and animals.
- (w). Current Affairs and "Who's Who".

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16. **PHYSICS**

(a). **Motion, Force and Energy**

(i). **Matter:** Physical measurements, scalar and vector quantities. Simple machines, structure of matter.

(ii). **Motion:** Motion and displacement, uniform and non-uniform motion, speed and velocity, acceleration, equations of motion-derivation and simple numerical.

(iii). **Force:** Meaning of force, inertia of a body, Newton's laws of motion, momentum, relationship between forces, acceleration and mass of an object-simple numerical based on these.

(iv). **Gravitation:** Newton's law of gravitation, free-fall and acceleration due to gravity, simple pendulum and restoring force, relationship between length and time period.

(v). **Work and Energy:** Energy, mechanical energy – potential and kinetic – their formulae, concept of work, work done by a constant force, relation between work and energy, simple numerical on work and energy.

(vi). **Light:** Reflection, law of reflection, refraction, law of refraction, refraction through prisms, lenses and optical instruments, simple and compound microscope.

(vii). **Heat** Heat as a form of energy, mechanical work and heat, heat and temperature, measurement of temperature, idea of Celsius and Fahrenheit scales and their conversion, specific heat, simple numerical based on it. Idea of conversion of heat into work and vice-versa, meaning of mechanical equivalent of heat – its determination by Joule's experiment. External and internal combustion engine.

(ix). **Electricity:** A source of energy, conductors and resistors, measurement of current, potential difference and resistance – Ohm's law, simple numerical based on it. heating effect of current, quantitative relationship between heat, electric current, resistance of common electrical

appliances based on heating effect, measurement of electrical energy – its unit, electrical power, simple numerical.

(x). **Magnetism:** Type of magnet, properties of magnet, magnetic field, electromagnet and their applications, DC & AC motors. Fleming 's left hand rule.

(xi). **Sound:** Sound and its property, propagation of sound, velocity, resonance, wave motion and applications.

(xii). **Wave Motion:** Nature of a wave, propagation of a wave through a medium, types of waves – longitudinal and transverse, periodic motion, idea of simple harmonic motion (graphical treatment). Definitions of displacement, amplitude, frequency, time period, wave length and their units, relationship between wavelength, frequency and velocity of a wave, simple numerical, energy transferred during propagation of waves.

(xiii). **Domestic electric circuit:** Elementary ideas about wiring, fuse, possible hazards and safety measures.

(xiv). **Sun as a Source of energy:** Absorption of solar energy by the earth, photosynthesis, solar heaters, solar cells; wind energy – wind mills; electricity from sea waves.

(xv). **Fuels:** Bio mass as a fuel-biogas, fossil fuels-coal, types of coal; petroleum, fractional distillation of petroleum, L.P.G, natural gas, classification of fuels –solid, liquid and gaseous fuels; characteristics of fuel-calorific value of fuels and its determination, ignition temperature, combustion of fuels, combustion of food in living organisms; characteristics of an ideal fuel.

(xvi). **Heat engines:** Idea of conversion of heat into work and vice-versa, meaning of mechanical equivalent of heat – its determination by joule's experiment (simple numerical based on work and energy conversion). External combustion engine (basic idea), working of internal combustion engines.

(xvii). **Nuclear energy:** Sources of the Sun's energy, composition of sunlight; basic idea of atomic nucleus, nuclear fusion, nuclear fission, chain reaction, energy released during fission, examples of uncontrolled fission and fusion, simple idea of nuclear reactor and atomic power plant. Radiation hazards. Energy crisis –causes and possible solution for overcoming it.

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17. **MATHS**

(a). **Arithmetic:** Natural numbers, integers, fractions, rational/irrational numbers, decimal fractions, HCF & LCM, square root, ratio and proportion, percentages, averages, profit & loss, simple and compound interest.

(b). **Algebra:** Addition, subtraction, multiplication and division of algebraic expressions, HCF & LCM, factorization, simple equations, surds, indices, logarithms, Solution of linear equations of two and three variables.
Ratio and proportion meaning and standard form, roots and discriminate of a quadratic equation $ax^2 + bx + c = 0$;

(c). **Calculus:** Elementary and basic problems of different and integral calculus. Basic concept of continuity.

(d). Mensuration

(i). **Area and Volume:** Area of four walls of a room, area of a circle, sector and segment of a circle; surface area and volume of cube, cuboids cone, cylinder, sphere.

(ii). **Trigonometry:** Trigonometric ratios of an angle A of a right angle triangle, Simple applications of trigonometric ratios for solving problems of different types, Simple identities based upon the above.

(iii). **Heights and Distances:** Solution of simple problems of height and distance using trigonometrically tables and logarithmic tables.

(e). **Geometry Lines and Angles:** Different characteristics of lines and angles, parallel and perpendicular lines, inserting lines, some of angles and triangles, interior and exterior angles. Triangles-properties, equality, congruency and similarity with respect to sides and angles. Parallelogram-types and properties. Circles – Properties, arc, chords, tangents, secants and angles subtended by arcs.

(f). **Parallelogram:** Types and properties. **Circles.** Arcs, chords, tangents, secants and angles subtended by arcs.

(g). **Statistics:** Histograms with given intervals, classification of data, frequency, frequency polygons, ogives. Mean, median and mode of grouped and ungrouped data, problems related to statistical techniques.

(h). **Probability:** Basic problems related to probability.

(j). **Computing:** Introduction to computers : role and use of computers in modern society, Hardware and software aspects of computers, Knowledge of applications and languages, Flow chart and solutions of problems through problem algorithm.

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18. **CHEMISTRY****(a). Matter-Nature and Behaviour**

(i). **Nature and behaviour:** Different types of substances, elements, compounds and their mixtures, Structure of matter. Atomic theory, molecules and atoms; Structure of atom-electrons, protons and neutrons, Composition of nucleus – atomic number and mass number, Valence electrons and valency. Preparation and properties of Hydrogen, Oxygen, Nitrogen and Carbon-dioxide. Oxidation and Reduction, Acid, bases and salts.

(ii). **Electrochemical cell** construction of a simple voltaic cell; working of an electrochemical cell; lead storage battery and dry cell.

(iii). **Classification of elements** Similarities and dissimilarities in the properties of some elements. Periodic law, periods and groups, gradation of properties of elements along a period and in the groups.

(iv). **Carbon and its compounds** Introduction, allotropies of carbon and their occurrence, structure, related property and uses. Hydrocarbon and their elementary structure, related property and uses, simple compounds of carbon, hydrogen and oxygen and their uses. Petroleum products, introductory account of synthetic fibres, plastics, rubber, soaps and detergents.

(v). **Extraction of metals** Metals and non-metals; occurrence, general metallurgical operations for extraction of pure metal, properties of metals and some alloys, uses of metals and non-metals, their compounds.

(vi). **Chemical bond** Formation of ionic and covalent bonds, important properties of electrovalent and covalent compounds.

(vii). **Electrolysis** Movement of ions during electrolysis; relationship between current, time and amount of metal deposited during electrolysis; electroplating.

(b). **Natural Resources**

(i). **Water** Water as a natural resources, origin of life in water as medium for the activity of the living, water as solvent, saturated and unsaturated solution, sea water as habitat of organism, salts from oceans, ocean current, use of water Dependence of man on natural resources – minerals from earth metals and non-metals, use of non metals.

(ii). **Air** Role of atmosphere in protection from radiation, composition of atmosphere, water and particulate matter in atmosphere, carbon dioxide and its adverse effect on living organisms, role of trees, release of carbon dioxide from fossil fuels and automobiles, corrosion of metals, damage of historical monuments from acidic gases, toxic effects of metallic particles, asbestos etc on living organisms carbon monoxide and its ill effects, smog, air pollution noise pollution and its effects on human beings.

Note The above syllabus is not a comprehensive list of topics pertaining to the subject. At times questions may be asked other than the above topics but definitely within the syllabus of CBSE.