SYLLABUS FOR SOLDIER TECHNICAL

1. ## PATTERN

Ser No	Subject	Questions	Marks	Pass Marks	Remarks
(a)	General Knowledge	10	20		
(b)	Maths	15	30	40	
(c)	Physics	15	30		
(d)	Chemistry	10	20		

2. ## SYLLABUS

GENERAL KNOWLEDGE

Abbreviations - National and International.

Sports - National and International.

Awards & Prizes - National awards, Gallantry awards, Nobel Prizes.

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

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

Terminology - Geographical terms, Economic terms, Astronomical terms, Legal terms and Misc terms.

UNO

Indian Armed Forces.

Indian Towns, States and Uts.

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

Indian News Agencies and Dailies.

Continents and Sub Continents.

Inventions and Discoveries.

Environment.

1. **The Constitution of India.**

Religious communities and Principal Languages.

National and International Days.

International Organizations.

Books and Authors.

The world of Plants and animals.

Current Affairs and "Who's Who".

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.**

PHYSICS

Motion, Force and Energy

Matter Physical measurements, scalar and vector quantities. Simple machines, structure of matter.

Motion Motion and displacement , uniform and non-uniform motion, speed and velocity, acceleration, equations of motion-derivation and simple numerical.

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.

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

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.

Light Reflection, law of reflection, refraction, law of refraction, refraction through prisms, lenses and optical instruments, simple and compound microscope.

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.

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.

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

Sound   Sound and its property, propagation of sound, velocity, resonance, wave motion and applications.

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.

Domestic electric circuit   Elementary ideas about wiring, fuse, possible hazards and safety measures.

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.

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.

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.

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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MATHS

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.

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 $ax^2 + bx + c = 0$;

Calculus. Elementary and basic problems of different and integral calcus. Basic concept of continuity.

Mensuration

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.

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.

Heights and Distances

Solution of simple problems of height and distance using trigonometrically tables and logarithmic tables.

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.

Parallelogram.   Types and properties.

Circles.   Arcs, chords, tangents, secants and angles subtended by arcs.

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.

Probability.   Basic problems related to probability.

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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CHEMISTRY

Matter-Nature and Behaviour

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-di-oxide.

Oxidation and Reduction, Acid, bases and salts.

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

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.

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.

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.

Chemical bond Formation of ionic and covalent bonds, important properties of electrovalent and covalent compounds.

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

Natural Resources

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.

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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