



DAYANAND SCREENING TEST SYLLABUS - 2027

MAHARASHTRA STATE BOARD

Chapter Name	Description / Key Topics	No. of Questions
SUBJECT: PHYSICS (25 Questions)		
Gravitation	Gravitation, circular motion, centripetal force, Kepler's laws of planetary motion, Newton's universal law of gravitation, uniform circular motion, magnitude of centripetal force, earth's gravitational acceleration, variation in g with height, depth, and shape of the earth, mass and weight, free fall, equations of motion under gravity, gravitational potential energy, escape velocity.	5
Effects of Electric Current	Energy transfer in an electric circuit, heating effect of electric current, Joule's law, equipment working on heating effect (heaters, fuses, bulbs), commercial unit of electrical energy (kWh), Right-Hand Thumb Rule, magnetic field produced by current through a straight conductor, circular loop, and solenoid, force acting on a current-carrying conductor in a magnetic field, Fleming's Left-Hand Rule, electric motor (principle, construction, and working), Faraday's law of induction, Fleming's Right-Hand Rule, electric generator (AC and DC generators), Direct Current (DC), Alternating Current (AC).	6
Refraction of Light	Laws of refraction, refractive index, absolute refractive index, relative refractive index, refraction of light in different media (denser to rarer, rarer to denser), twinkling of stars, apparent position of stars, advanced sunrise and delayed sunset, dispersion of light, partial and total internal reflection, critical angle, rainbow formation.	5
Lenses	Types of lenses (convex and concave), center of curvature, radius of curvature, principal axis, optical center, principal focus, focal length, ray diagrams for convex and concave lenses, Cartesian sign convention, lens formula, magnification, power of a lens, combination of lenses, human eye structure and power of accommodation, defects of vision (myopia, hypermetropia, presbyopia) and corrections, uses of lenses (simple microscope, compound microscope, telescope).	5
Heat	Latent heat, specific heat latent heat of fusion and vaporization, heating and cooling curves, temperature versus time, regellation, anomalous behavior of water between 0 °C and 4 °C, Hope's apparatus study, practical consequences in aquatic life during winter, dew point temperature, humidity (relative and absolute humidity), unit of heat (calorie and joule), specific heat capacity, principle of heat exchange.	4
SUBJECT: CHEMISTRY (25 Questions)		
Periodic Classification of Elements	Classification of Elements; Dobereiner's Triads; Newlands' Law of Octaves; Mendeleev's Periodic Table; Modern Periodic Law; Modern Periodic Table; Groups, Periods and Electronic Configuration; Atomic Size; Metallic and Non-metallic Character; Periodic Trends and Properties	5
Chemical Reactions and Equations	Chemical Reactions and Chemical Equations; Balancing Chemical Equations; Combination Reactions; Decomposition Reactions; Single Displacement Reactions; Double Displacement Reactions; Endothermic and Exothermic Processes; Oxidation and Reduction; Rate of Chemical Reactions; Factors Affecting Reaction Rate; Corrosion of Metals; Rancidity	5
Metallurgy	Physical Properties of Metals and Non-metals; Chemical Properties of Metals; Reactions of Metals; Reactivity Series of Metals; Chemical Properties of Non-metals; Ionic Compounds; Basic Principles of Metallurgy; Concentration of Ores; Extraction of Metals; Refining of Metals; Corrosion of Metals; Prevention of Corrosion	8
Carbon Compounds	Bonding in Carbon Compounds; Carbon as a Versatile Element; Hydrocarbons; Straight-chain, Branched-chain and Ring Structures; Nomenclature of Carbon Compounds; Functional Groups; IUPAC Nomenclature; Homologous Series; Combustion and Oxidation; Addition and Substitution Reactions; Ethanol; Ethanoic Acid; Macromolecules and Polymers	7
SUBJECT: MATHEMATICS (25 Questions)		
Linear Equations in Two Variables	Graphical method of solving linear equations in two variables; Cramer's Rule; Application of simultaneous equations	2
Quadratic Equations	Nature of roots; Solution of quadratic equation; Relation between roots and coefficients; Application of quadratic equation	2
Arithmetic Progression	n^{th} term of an A.P.; Sum of first n terms of an A.P.; Application of A.P.	3
Similarity	Tests of similarity of triangles: SAS, SSS, AAA and AA; Properties of similar triangles; Property of an angle bisector of a triangle; Property of areas of similar triangles; Equal Intercept Theorem	3
Pythagoras Theorem	Theorem of geometric mean; Pythagoras Theorem and its converse; Apollonius Theorem; Application of pythagoras theorem	2
Coordinate Geometry	Distance Formula; Section Formula; Midpoint Formula; Centroid Formula; Slope of line and Parallel lines	2
Circle	Theorem of touching circles; Arc of a circle; Inscribed angle and Intercepted arc; Cyclic quadrilateral; Theorem of angle between tangent and secant; Internal and external division of chords; Tangent Secant Segment Theorem	2
Trigonometry	Trigonometric Ratios of some specific angles (0°, 30°, 45°, 60°, 90°); Trigonometric Identities; Application (Heights and Distances)	3
Mensuration	Area and Perimeter of a triangle; Area and Circumference of a circle; Length of arc, Area of sector and Area of segment of a circle; Surface area, Curved surface area and Total surface area; Volume of 3D solids: Cube, Cuboid, Cylinder, Cone, Sphere and Hemisphere	3
Probability	Random Experiment, Sample space and Event space; Problems based on dice, coin, playing card, etc.	2
Statistics	Random, Ungrouped and Grouped Data; Measures of Central Tendency: Mean, Median and Mode; Empirical relationship between mean, median and mode	1

SUBJECT: BIOLOGY (25 Questions)		
Heredity and Evolution	Heredity (2Q): Historical account (Scientists work), Transcription, Translation and Translocation; Evolution (3Q): Evidences of evolution (morphological, anatomical, vestigial organs, paleontological, connecting links, embryological), Human evolution	5
Life Processes in Living Organisms Part 1	Process of respiration (3Q): Living organisms and energy production (Glycolysis, Tricarboxylic Acid Cycle / TCA, Electron Transport Chain reaction), Energy production from different molecules (Carbohydrates, Lipids, Proteins); Cell division (2Q): Mitosis (In detail), Meiosis (Brief account)	5
Life Processes in Living Organisms Part 2	Modes of Reproduction (3Q): Asexual reproduction (fission, budding, regeneration, fragmentation, spore formation, and vegetative propagation), Sexual reproduction in plants and animals; Human Reproduction (2Q): Human reproductive system, Menstrual cycle, Reproduction & modern technology (twins, IVF, surrogate mother, sperm bank)	5
Environmental Management	Ecosystem and its components; Food chain and energy flow	2
Animal Classification	Salient features of Phylum Porifera to Phylum Echinodermata (In brief with examples); Sub-phylum Vertebrata and its classes (Cyclostomata, Pisces, Amphibian, Reptilian, Aves, Mammalia) (In brief with examples)	3
Introduction to Microbiology	Microbes in household products (Dairy, Yoghurt, Butter, Cheese, Probiotics, Bread); Microbes in Industrial Production (Alcohol, vinegar, antibiotics, organic acids, enzymes)	2
Cell Biology and Biotechnology	Stem cell technology and its uses; Biotechnology: Main applications (Agriculture, Medicine, Industrial, Environment); Commercial use of biotechnology (Bt cotton, transgenic animals)	3
SUBJECT: ENGLISH (15 Questions)		
GRAMMAR	Tenses; Articles and determiners; Prepositions; Conjunctions; Subject-verb agreement; Active and passive voice; Direct and indirect speech; Modals; Clauses; Sentence structure	6
VOCABULARY	Synonyms and antonyms; One-word substitutions; Idioms and phrases; Spellings; Word meanings	5
READING	Reading comprehension Interpretation of Passages	4
SUBJECT: LOGICAL REASONING (10Questions)		
Syllogism	Statements and conclusions; All, Some and No types of statements; Possibility-based conclusions; Identifying valid and invalid conclusions; Logical deduction using Venn diagrams	3
Coding-Decoding	Letter, number and word coding; Alphabet-position-based coding; letter shifting; substitution coding; Identifying patterns in coded words	3
Clocks	Reading clock-hand positions; angles between hour and minute hands; Time-based problems; when the hands coincide or are opposite each other	2
Calendars	Days of the week; odd days; leap years and ordinary years; Finding the day of the week for a given date; calendar-based logical problems	2