

NSO SYLLABUS

Class 1

- The actual test paper has 35 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 10 questions in section I and 25 in section II.

Syllabus

Section – I (Mental Ability): Numerals, Number Name and Number Sense (2 digit numbers), Addition, Subtraction, Length, Weight, Time, Money, Geometrical Skills, Patterns, Odd One Out, Series Completion, Problems Based on Figures.

Section – II (Science): Plants, Animals, Human Beings and Their Needs, Good Habits and Safety Rules, Air and Water, Weather and the Sky.

Class 2

- The actual test paper has 35 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 10 questions in section I and 25 in section II.

Syllabus

Section – I (Mental Ability): Numerals, Number Name and Number Sense (3 digit numbers), Addition, Subtraction, Time, Calendar, Measurement of Weight, Length and Temperature, Geometrical Shapes, Money, Problems Based on Figures, Series Completion, Patterns, Find Odd Numeral Out.

Section – II (Science): Plants, Animals, Human Body, Family, Food, Housing and Clothing, Occasions and Festivals, Occupation, Good Habits and Safety Rules, Transport and Communication, Earth and Universe.

Class 3

- The actual test paper has 35 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 10 questions in section I and 25 in section II.

Syllabus

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Section – I (Mental Ability): Numerals, Number Names and Number Sense (4 digit numbers), Addition, Subtraction, Fractional Numbers, Multiplication, Division, Time, Straight and Curved Lines, Calendar, Measurement of Weight and Capacity, Geometrical Shapes, Money, Patterns, Problems Based on Figures, Odd One Out, Series Completion, Coding-Decoding, Mirror Image, Embedded Figures.

Section – II (Science) : Plants and Animals, Birds, Water, Food, House and Occupation, Transport and Communication, Human Body, Earth and Universe, Human Body, Matter and Materials, Light, Sound and Force.

Class 4

- The actual test paper has 35 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 10 questions in section I and 25 in section II.

Syllabus

Section – I (Mental Ability) : Number and Numeration (5 digit numbers), Place-value, Addition, Subtraction, Multiplication, Division, Comparison, Geometrical Shapes, Symmetry, Measurement of Length, Weight and Capacity, Time, Money, Fractional Numbers, Pictorial Representation of Data, Roman Numerals, Multiples and Factors, Perimeter of Various Shapes, Problems Based on Figures, Odd One Out, Series Completion, Coding-Decoding, Direction Sense, Mathematical Reasoning, Mirror Images, Embedded Figures, Patterns, Conversions, Number Ranking, Alphabetical Test.

Section – II (Science): Plants, Animals, Water, Transport, Earth and Universe, Human Body, Matter and Materials, General Activities.

Class 5

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Number Sense, Regional and Roman Numerals, Numbers up to Lakhs, Multiples and Factors, Fractional Numbers, Addition, Subtraction, Multiplication, Division, Decimals, Geometrical Shapes and Angles, Symmetry, Measurement of Length, Time, Money, Weight, Perimeter and Area of Square, Rectangle and Circle, Pictorial Representation of Data, HCF and LCM, Problems Based on Figures, Odd One Out, Series Completion, Coding-Decoding, Mathematical Reasoning, Mirror Images, Embedded Figures, Direction Sense, Patterns, Number Ranking, Alphabetical Test.

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Section – II (Science): Animals, Human Body and Health, Plants and Food, Water, Natural Resources and Calamities, Earth and Universe, Matter, General Science.

Class 6

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Knowing our Numbers, Whole Numbers, Playing with Numbers, Basic Geometrical Ideas, Understanding Elementary Shapes, Integers, Fractions, Decimals, Data Handling, Mensuration, Algebra, Ratio and Proportion, Symmetry, Practical Geometry, Logical Reasoning.

Section – II (Science) : Motion and Measurement of Distances, Light, Shadows and Reflections, Electricity and Circuits, Fun with Magnets, Air and Water, Sorting and Separation of Materials into Groups, Changes Around Us, Living Organisms and Their Surroundings, Food and its components.

Class 7

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Integers, Fractions and Decimals, Data Handling, Simple Equations, Lines and Angles, The Triangle and its Properties, Congruence of Triangles, Comparing Quantities, Rational Numbers, Practical Geometry, Perimeter and Area, Algebraic Expressions, Exponents and Powers, Symmetry, Visualising Solid Shapes, Logical Reasoning, Conversions, Simple Probability.

Section – II (Science) : Heat, Motion and Time, Electric Current and its Effect, Winds, Storms and Cyclones, Light, Acids, Bases and Salts, Physical and Chemical Changes, Weather, Climate and Adaptations of Animals, Fibres to Fabrics, Nutrition in Plants and Animals, Respiration in Organisms, Transportation in Plants and Animals, Reproduction in Plants, Natural Resources and Their Conservation.

Class 8

- The actual test paper has 50 questions.
- Time allowed : 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Rational Numbers, Exponents and Powers, Direct and Inverse Variations, Comparing Quantities, Algebraic Expressions and Identities, Factorization of Algebraic Expressions, Linear Equations in One Variable, More About Triangles, Congruent Triangles, Understanding Quadrilaterals, Mensuration, Data Handling, Visualising Solid Shapes, Introduction to Graphs, Playing with Numbers, Squares and Square Roots, Cubes and Cube Roots, Problem Based on Figures, Odd One Out, Series Completion, Coding-Decoding, Mathematical Reasoning, Analytical Reasoning, Mirror Images, Embedded Figures.

Section – II (Science) : Crop Production and Management, Microorganisms, Synthetic Fibres and Plastics, Metals and Non-Metals, Coal and Petroleum, Combustion and Flame, Conservation of Plants and Animals, Cell, Reproduction in Animals, Force and Pressure, Friction, Sound, Chemical Effects of Electric Current, Some Natural Phenomena, Light, Stars and Solar System, Pollution of Air and Water.

Class 9

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Number Systems, Polynomials, Coordinate Geometry, Linear Equations in Two Variables, Introduction to Euclid's Geometry, Lines and Angles, Triangles, Quadrilaterals, Areas of Parallelograms and Triangles, Circles, Constructions, Heron's Formula, Surface Areas and Volumes, Statistics, Probability, Logical (Verbal and Non-Verbal) and Analytical Reasoning.

Section – II (Science) : Motion, Force and Laws of Motion, Gravitation, Work and Energy, Sound, Matter in Our Surroundings, Is Matter Around Us Pure, Atoms and Molecules, Structure of Atom, Cell -

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The Fundamental Unit of Life, Tissues, Diversity in Living Organisms, Why Do We Fall Ill, Natural Resources, Improvement in Food Resources.

Class 10

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 15 questions in section I and 35 in section II.

Syllabus

Section – I (Mental Ability) : Real Numbers, Polynomials, Pair of Linear Equations in Two Variables, Quadratic Equations, Arithmetic Progressions, Triangles, Coordinate Geometry, Introduction to Trigonometry, Some Applications of Trigonometry, Circles, Constructions, Areas Related to Circles, Surface Areas and Volumes, Statistics, Probability, Direction Sense Test, Mathematical operations, Number Ranking & Time Sequence Test, Coding-Decoding, Distance, Speed, Time and General Reasoning Based on Prescribed Syllabus.

Section – II (Science) : Chemical Reactions and Equations, Acids, Bases and Salts, Metals and Non-Metals, Carbon and its Compounds, Periodic Classification of Elements, Life Processes, Reproduction in Organisms, Heredity and Evolution, Light-Reflection and Refraction, Human Eye and Colourful World, Electricity, Magnetic Effects of Electric Current, Sources of Energy, Our Environment and its Management.

Class 11

- The actual test paper has 50 questions.
- Time allowed : 60 minutes.
- There are 2 sections: 20 questions in section I and 30 in section II.

Syllabus

Section –I (Mathematics) : Sets, Relations and Functions, Mathematical Induction, Logarithms, Complex Numbers & Quadratic Equations, Linear Inequations, Differentiation, Sequences and Series (A.P. & G.P. Misc.), Trigonometry, Cartesian System of Rectangular Coordinates, Straight Lines and Family of Straight Lines, Circles, Conic Section, Trigonometry, Permutations and Combinations, Binomial Theorem, Statistics, Mathematical Logic, Limits and Derivatives, Probability, Introduction to 3-D Geometry, Verbal and Non-Verbal Reasoning.

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or

Section –I (Biology) : Diversity in the Living World, Structural Organisation in Plants and Animals, Cell : Structure and Functions, Plant Physiology, Human Physiology.

Section –II (Physics & Chemistry) : *Physics:* Units and Measurements, Mechanics, Properties of Matter, Heat and Thermodynamics, Oscillations, Waves.

Chemistry: Some Basic Concepts of Chemistry, Structure of Atom, Classification of Elements and Periodicity in Properties, Chemical Bonding and Molecular Structure, States of Matter, Thermodynamics, Equilibrium, Redox Reactions, Hydrogen, The *s*-Block Elements, The *p*-Block Elements (Groups 13 and 14), Organic Chemistry - Some Basic Principles and Techniques, Hydrocarbons, Environmental Chemistry.

Class 12

- The actual test paper has 50 questions.
- Time allowed: 60 minutes.
- There are 2 sections: 20 questions in section I and 30 in section II.

Syllabus

Section –I (Mathematics) : Sets, Relations and Functions, Mathematical Induction, Logarithms, Complex Numbers, Linear Inequations, Quadratic Equations, Sequences and Series, Trigonometry, Cartesian System of Rectangular Coordinates, Straight Lines and Family of Straight Lines, Circles, Conic Section, Permutations and Combinations, Binomial Theorem, Exponential and Logarithmic Series, Mathematical Logic, Statistics & Probability, Three Dimensional Geometry, Vectors, Stocks, Shares and Debentures, Average and Partition Values, Index Numbers, Matrices and Determinants, Limits, Differential Calculus, Integral Calculus, Verbal and Non-Verbal Reasoning.

or

Section –I (Biology): Reproduction, Genetics and Evolution, Biology in Human Welfare, Biotechnology, Ecology.

Section –II (Physics & Chemistry) : *Physics:* Electricity and Magnetism, Electromagnetic Induction, AC, E.M. Waves, Optics, Modern Physics, Solids and Semiconductor Devices, Communication Systems.

Chemistry: The Solid State, Solutions, Electrochemistry, Chemical Kinetics, Surface Chemistry, General Principles and Processes of Isolation of Elements. The *p*-Block Elements (Group 15 to 18). The *d* and *f*-Block Elements, Coordination Compounds, Haloalkanes and Haloarenes, Alcohols, Phenols and Ethers, Aldehydes, Ketones and Carboxylic Acids, Amines, Biomolecules, Polymers, Chemistry in Everyday Life.

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For the National Science Olympiad (NSO), there would be one common question paper for both medical and non-medical students of classes 11 & 12.

The NSO paper would have 4 sections. Section 1 and section 2 on physics and chemistry would be compulsory for all students. Students may choose between section 3 on biology or section 4 on non-biology questions and answer as per their stream.

The above is expected to simplify and stream line registrations of class 11 and class 12 students. The earlier practice of having separate papers for biology and non-biology students is being discontinued.