NATIONAL SCIENCE & MATH OLYMPIAD SYLLABUS

ENGLISH

Class	Syllabus & Topics
One	Spelling Correction & Alphabets (What comes before and after)
Two	Spelling Correction & Alphabets (What comes before and after)
Three	Spelling Correction & Singular & Plural
4th	Spelling Correction & Singular & Plural
5th	The syllabus includes singular plural, word meanings, synonyms, correct spellings, and simple sentences.
6th	The syllabus includes singular plural, word meanings, synonyms, correct spellings, and simple sentences.
7th	The syllabus includes nouns, singular plural, word meanings, synonyms, antonyms, correct spellings, and simple tenses.
8th	The syllabus includes nouns, singular plural, word meanings, synonyms, antonyms, correct spellings, and simple tenses.
9th	The syllabus includes synonyms, antonyms, and (Present, Past & Future) tenses.
10th	The syllabus includes synonyms, antonyms, and (all kinds of present, past & future) tenses.
11th	The syllabus includes active and passive voice, nouns, pronouns, and all kinds of tenses and sentences.
12th	The syllabus covers active and passive voice, direct and indirect, nouns, pronouns, and various tenses and sentence structures.

O-Levels	The syllabus includes synonyms, antonyms, and (all kinds of present, past & future) tenses.
A-Levels	The syllabus covers active and passive voice, direct and indirect, nouns, pronouns, and various tenses and sentence structures.
DAE	The syllabus covers active and passive voice, direct and indirect, nouns, pronouns, and various tenses and sentence structures.
ADP	The syllabus covers active and passive voice, direct and indirect, nouns, pronouns, and various tenses and sentence structures.
Undergraduate	The syllabus covers active and passive voice, direct and indirect, nouns, pronouns, and various tenses and sentence structures.
Bachelors & Masters/M.Phil .	The syllabus covers ▪ Parts of Speech ▪ All type of tense including negative & interrogative ▪ Sentence types ▪ Pronouns & its types ▪ Adverbs & Adjectives ▪ Prepositions ▪ Nouns ▪ Verbs ▪ Interjections ▪ Conjunctions ▪ Determiners ▪ Word Order ▪ Auxiliary Verbs ▪ Connectors ▪ Active/Passive ▪ Possessive

COMPUTER SCIENCE

Class	Syllabus
One	Computer Basics & Parts
Two	Computer Basics & Parts
Three	Computer Basics, Parts & Uses
4th	Computer Basics, Parts & Uses
5th	Computer Basics, Parts, Uses, MS Word & Excel
6th	Computer Basics, Parts, Uses, MS Word & Excel
7th	Computer Basics, Parts, Uses, MS Word & Excel, Internet & Email, Computer Viruses, Number System, Multimedia Applications
8th	Computer Basics, Parts, Uses, MS Word & Excel, Internet & Email, Computer Viruses, Number System, Multimedia Applications, Programming in QBASIC, Computer Networking System
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about Computer Science
DAE	Everything about Computer Science
Undergraduate	Everything about Computer Science
Bachelors & Masters/M.Phil.	Everything about Computer Science

GENERAL SCIENCE/GK

Class	Syllabus
One	Basics about science, animals & body parts
Two	Basics about science, animals & body parts
Three	Basics about science, plants, animals & body parts
4th	Food & digestion, plant life, animal life, our needs, matter and force, earth and the universe
5th	Classification of living organisms, flowers and seeds, environmental pollution, physical and chemical changes of matter, light and sound, electricity and magnetism, technology in everyday life (Basic concepts)
6th	Cellular Organization, Reproduction in Plants, Balanced Diet, Human Digestive System, Matter as Particles, Elements and Compounds, Mixtures, Energy, Electricity, Magnetism, Technology, Solar System
7th	Plant system, human respiratory and circulatory system, immunity and diseases, physical and chemical changes, structure of an atom, chemical bond, solution, force and motion, waves and energy, heat and temperature, technology in everyday life, earth and space
8th	Ecology, human nervous system, variations, heredity and cell division, biotechnology, the periodic table of elements, chemical reactions and bonding, acids, bases and salts, force and pressure, reflection and refraction of light, electricity and magnetism, technology in everyday life, our universe
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about General Science
DAE	Everything about General Science
Undergraduate	Everything about General Science
Bachelors & Masters/M.Phil.	Everything about General Science

MATHEMATICS

Class	Syllabus
One	Counting, What comes before and next, Basic Plus & Minus, Shapes
Two	Counting, What comes before and next, Basic Plus & Minus, Shapes, Tables
Three	▪ Whole Numbers – understanding and writing numbers. ▪ Number Operations – addition, subtraction, basic operations. ▪ Fractions – simple fractions and basic problems. ▪ Measurement – length, mass (weight), capacity. ▪ Time – reading clocks, calendars, and time problems. ▪ Geometry – shapes, 3-D objects, points & lines & angles. ▪ Data Handling
4th	▪ Whole Numbers ▪ Addition and Subtraction ▪ Multiplication and Division ▪ Factors and Multiples ▪ Fractions ▪ Decimals ▪ Measurement ▪ Time ▪ Data Handling ▪ Geometry
5th	▪ Whole Numbers and Operations ▪ HCF and LCM ▪ Fractions ▪ Decimals and Percentage ▪ Distance, Mass, Capacity and Time ▪ Unitary Method ▪ Geometry ▪ Perimeter and Area ▪ Data Handling and Probability
6th	▪ Factors and Multiples ▪ Integers ▪ Ratio, Rate and Proportion

	▪ Sets ▪ Introduction to Algebra ▪ Linear Equations ▪ Geometry ▪ Practical Geometry ▪ Mensuration ▪ Data Handling and Probability
7th	▪ Rational Numbers ▪ Square and Square Roots ▪ Ratio, Rate and Proportion ▪ Financial Arithmetic ▪ Sets ▪ Algebra ▪ Transformations ▪ Linear Equations ▪ Geometry ▪ Practical Geometry ▪ Mensuration ▪ Data Handling ▪ Probability
8th	▪ Real Numbers ▪ Estimation and Approximation ▪ Square Roots and Cube Roots ▪ Financial Arithmetic ▪ Sets ▪ Algebra and Sequences ▪ Linear Equations and Inequalities ▪ Transformations ▪ Geometry ▪ Practical Geometry ▪ Mensuration ▪ Data Handling ▪ Probability
9th	▪ Real Numbers – **Rational & irrational numbers, number properties.** ▪ Logarithms – **Introduction to logs and their rules.** ▪ Sets and Relations – **Set theory basics and relations.**

	▪ Factorization and Algebraic Manipulation – **Factoring expressions and algebra techniques.** ▪ Linear Equations and Inequalities – **Solving equations and inequality problems.** ▪ Trigonometry and Bearing – **Trigonometric ratios and bearing problems.** ▪ Coordinate Geometry – **Introduction to Cartesian plane & points.** ▪ Geometry of Straight Lines – **Properties and equations of straight lines.** ▪ Geometry and Polygons – **Shapes, properties, and angle relations.** ▪ Practical Geometry – **Geometric constructions (compass/ruler).** ▪ Basic Statistics – **Collecting, organizing, and interpreting data.**
10^{th}	▪ Complex Numbers – **understanding numbers with real and imaginary parts.** ▪ Quadratic Equations – **solving equations of the form $ax^2 + bx + c = 0$.** ▪ Matrices and Determinants – **basics of matrix operations and determinant evaluation.** ▪ Linear & Quadratic Inequalities – **inequalities and how to solve them.** ▪ Algebraic Fractions – **simplifying and solving expressions involving fractions with variables.** ▪ Functions & Graphs – **understanding relations, functions, and plotting graphs.** ▪ Vectors in Plane – **introduction to vector concepts in two dimensions.** ▪ Application of Trigonometry – **using trigonometric ratios in problems.** ▪ Chord & Arcs of a Circle – **circle geometry basics.** ▪ Tangents & Angles of a Circle – **properties of circle angles and tangents.** ▪ Practical Geometry of Circles – **geometric constructions related to circles.** ▪ Basic Statistics – **organizing and interpreting data**

	(averages, graphs).
11th	▪ Complex Numbers ▪ Matrices and Determinants ▪ Vectors ▪ Sequences and Series ▪ Polynomials ▪ Permutation and Combination ▪ Mathematical Induction and Binomial Theorem ▪ Fundamentals of Trigonometry ▪ Trigonometric Functions
12th	▪ Functions and Graphs – **Types of functions and how to draw/interpret their graphs.** ▪ Limit, Continuity and Derivative – **Limits of functions, continuous functions, and basic derivatives.** ▪ Integration – **Techniques of integration and applications.** ▪ Differential Equations – **Solving first-order differential equations.** ▪ Kinematics of Motion in a Straight Line – **Motion concepts like speed, velocity, and acceleration in a straight line.** ▪ Analytical Geometry – **Geometry using algebra (points, lines, distances).** ▪ Conic Section – **Circles, parabolas, ellipses, and hyperbolas.** ▪ Inverse Trigonometric Functions and Their Graphs – **Understanding inverse trig functions and plotting them.** ▪ Solution of Trigonometric Equations – **Techniques to solve various trig equations.** ▪ Numerical Methods – **Approximation techniques and numerical solutions to problems.**
O-levels	▪ Types of number (natural, integers, real) ▪ Fractions, decimals, percentages ▪ Directed numbers (negatives) ▪ Standard form

	▪ Ratio, proportion, rate ▪ Logarithm ▪ Exponential growth & decay ▪ Surds ▪ Algebraic manipulation (simplify/expand) ▪ Algebraic representation & formulae ▪ Equations (linear, quadratic, simultaneous) ▪ Inequalities ▪ Sequences ▪ Graphs of functions ▪ Graphs in practical situations ▪ Function notation ▪ Coordinate geometry ▪ Geometrical terms & constructions ▪ Similarity & congruence ▪ Symmetry ▪ Angles ▪ Mensuration (area, volume) ▪ Trigonometry ▪ Vectors in 2 dimensions ▪ Transformations (rotation/reflection) ▪ Probability ▪ Averages (mean, median, mode) ▪ Statistical diagrams ▪ Histogram & cumulative frequency diagrams
A-Levels	▪ Quadratics ▪ Functions ▪ Coordinate Geometry ▪ Circular Measure ▪ Trigonometry ▪ Series ▪ Differentiation ▪ Integration
ADP/DAE	▪ **Real Numbers** – Rational & irrational numbers, number properties. ▪ **Logarithms** – Introduction to logs and their rules. ▪ **Sets and Relations** – Set theory basics and relations. ▪ **Factorization and Algebraic Manipulation** –

	Factoring expressions and algebra techniques. ▪ **Linear Equations and Inequalities** – Solving equations and inequality problems. ▪ **Basic Statistics** – Collecting, organizing, and interpreting data. ▪ **Complex Numbers** – understanding numbers with real and imaginary parts. ▪ **Quadratic Equations** – solving equations of the form $ax^2 + bx + c = 0$. ▪ **Matrices and Determinants** – basics of matrix operations and determinant evaluation. ▪ **Linear & Quadratic Inequalities** – inequalities and how to solve them. ▪ **Algebraic Fractions** – simplifying and solving expressions involving fractions with variables. ▪ **Trigonometry and Bearing** – Trigonometric ratios and bearing problems. ▪ **Coordinate Geometry** – Introduction to Cartesian plane & points. ▪ **Geometry of Straight Lines** – Properties and equations of straight lines. ▪ **Geometry and Polygons** – Shapes, properties, and angle relations. ▪ **Practical Geometry** – Geometric constructions (compass/ruler). ▪ **Application of Trigonometry** – using trigonometric ratios in problems. ▪ **Practical Geometry of Circles** – geometric constructions related to circles.
Undergraduate	▪ **Functions and Graphs** – Types of functions and how to draw/interpret their graphs. ▪ **Limit, Continuity and Derivative** – Limits of functions, continuous functions, and basic derivatives. ▪ **Integration** – Techniques of integration and applications. ▪ **Differential Equations** – Solving first-order differential equations. ▪ **Kinematics of Motion in a Straight Line** – Motion concepts like speed, velocity, and acceleration in a

	straight line. ▪ **Analytical Geometry** – Geometry using algebra (points, lines, distances). ▪ **Conic Section** – Circles, parabolas, ellipses, and hyperbolas. ▪ **Inverse Trigonometric Functions and Their Graphs** – Understanding inverse trig functions and plotting them. ▪ **Solution of Trigonometric Equations** – Techniques to solve various trig equations. ▪ **Numerical Methods** – Approximation techniques and numerical solutions to problems.
Bachelors & Masters/M.Phil.	Everything about Mathematics **Preliminaries** ▪ Real numbers, inequalities, intervals ▪ Functions and types (polynomial, rational, exponential, logarithmic, trigonometric) ▪ Limits and continuity ▪ Sequences and series (arithmetic, geometric, convergence) **Differential Calculus (Single-Variable)** ▪ Definition of derivative (limit definition) ▪ Rules of differentiation (sum, product, quotient, chain rule) ▪ Derivatives of standard functions (polynomials, trigonometric, exponential, logarithmic) ▪ Implicit differentiation ▪ Higher-order derivatives ▪ Applications: o Tangents and normals o Maxima and minima o Curve sketching o Related rates **Integral Calculus (Single-Variable)** ▪ Indefinite integrals (basic rules) ▪ Techniques of integration: substitution, by parts, partial fractions, trigonometric integrals ▪ Definite integrals ▪ Applications:

	○ Area under curves ○ Area between curves ○ Volumes of solids of revolution ○ Arc length **Multivariable Calculus** ▪ Functions of several variables ▪ Partial derivatives ▪ Chain rule for multivariable functions ▪ Gradient, divergence, curl (basic vector calculus) ▪ Multiple integrals (double and triple integrals) ▪ Applications: ○ Surface area ○ Volume of solids ○ Optimization problems **Series and Sequences (Advanced)** ▪ Taylor and Maclaurin series ▪ Binomial series ▪ Convergence tests for series (comparison, ratio, root tests) ▪ Power series **Differential Equations (Introductory)** ▪ First-order ODEs (separable, linear) ▪ Second-order linear ODEs with constant coefficients ▪ Applications to growth/decay, physics, and engineering problems

ECONOMICS

Class	Syllabus
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about Economics
DAE	Everything about Economics
Undergraduate	Everything about Economics
Bachelors & Masters/M.Phil.	Everything about Economics

BIOLOGY

Class	Syllabus
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about Biology
DAE	Everything about Biology
Undergraduate	Everything about Biology
Bachelors & Masters/M.Phil.	Everything about Biology

CHEMISTRY

Class	Syllabus
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about Chemistry
DAE	Everything about Chemistry
Undergraduate	Everything about Chemistry
Bachelors & Masters/M.Phil.	Everything about Chemistry

PHYSICS

Class	Syllabus
9th	According to the School Book
10th	According to the School Book
11th	According to the School Book
12th	According to the School Book
O-levels	According to the School Book
A-Levels	According to the School Book
ADP	Everything about Physics
DAE	Everything about Physics
Undergraduate	Everything about Physics
Bachelors & Masters/M.Phil.	Everything about Physics