Syllabus

Mathematics Syllabus	
Topic	**Sub Topic**
Algebra	1.Sets (Concepts & Operations) 2.Venn diagram 3.De Morgan's Law 4.Cartesian Product 5.Relation 6.Equivalence Relation 7.Real Numbers 8.Complex Numbers 9.Modulus 10.Cube Root 11.Conversion of a number (Binary to Decimal & Decimal to Binary) 12.Arithmetic 13.Geometric and Harmonic Progressions 14.Quadratic Equations 15.Linear Inequations 16.Permutation and Combination 17.Binomial Theorem 18.Logarithms
Calculus	1.Concept of a real valued function 2.Domain 3.Range and Graph of a function 4.Composite functions 5.One to One 6.Onto and Inverse Functions 7.Notion of limit 8.Standard limits 9.Continuity of functions 10.Algebric Operations on Continuous functions 11.Derivative of function at a point 12.Geometrical and Physical Interpretation of a derivative application 13.Derivatives of sum 14.Product and Quotient of functions 15.Derivative of a function with respect to another function 16.Derivative of a Composite Function 17.Second Order Derivatives 18.Increasing and Decreasing Function 19.Application of Derivatives in problems of Maxima and Minima
Matrices and Determinants	1.Types of matrices 2.Operations on matrices 3.Determinant of a matrix 4.Basic Properties of Determinants 5.Adjoint and Inverse of a Square Matrix

	6.Applications-Solution of a system of Linear Equations in two or three unknown by – 1. Cramer's Rule 2.Matrix Method
Integral Calculus and Differential Equations	1.Integration as inverse of differentiation 2.Integration by substitution and by parts 3.Standard Integrals involving algebraic Expressions 4.Trigonometric 5.Exponential and Hyperbolic Functions 6.Evaluation of definite Integrals – Determination of areas of plane regions bounded by curves-applications 7.Definition of order and degree of a differential equation by examples. 8.General and particular solution of differential equations 9.Solution of first order and first-degree differential equations of various types by examples 10.Application in problems of growth and decay
Trigonometry	1.Angles and their measures in degrees and in radius 2.Trigonometric Ratio 3.Trigonometric Identities 4.Sum and Difference Formulae 5.Multiple and Sub-Multiple Angles 6.Inverse Trigonometric Functions 7.Applications – Height and Distance 8.Properties of Triangles
Vector Algebra	1.Vectors in two and three dimensions 2.Magnitude and Direction of a vector 3.Unit and Null Vectors 4.The Addition of Vectors 5.Scalar Multiplication of a Vector 6.Scalar Product 7.Dot Product of two vectors 8.Vector product or Cross product of two vectors 9.Applications- Work done by Force and Moment of a Force in Geometrical Problems.
Analytical Geometry of Two or Three Dimension	1.Rectangular Cartesian Coordinate System 2.Distance Formula 3.Equation of a line in various forms 4.The angle between two lines 5.Distance of a point from a line 6.Equation of a circle in standard and in a general form

	7.Standard forms of Parabola, Ellipse and Hyperbola 8.Eccentricity and Axis of a conic 9.Point in a three-dimensional space 10.The distance between two points 11.Direction, Cosines and Direction Ratio 12. Equation two points 13.Direction Cosines and direction ratios 14. Equation of a plane and a line in various forms 15.Angle between two lines and angle between two planes 16.Equation of a sphere
Statistics and Probability	1.Probability: Random experiment, outcomes, and associated sample space, events, mutually exclusive and exhaustive events, impossible and certain events 2.Union and Intersection of events. Complementary, elementary, and composite events 3.Definition of probability—classical and statistical—examples 4.Elementary theorems on probability-simple problems 5. Conditional probability, Bayes' theorem—simple problems 6. Random variable as function on a sample space 7.Binomial Distribution 8. Examples of random experiments giving rise to Binomial distribution

NDA English Syllabus

English Syllabus	
Topic	**Total Marks**
Spotting Error	20
Comprehension	**24**
Selecting words	**40**
Synonyms	**20**
Antonyms	**20**
Ordering of words in a sentence	**36**
Sentence Improvement	**40**
Total	**200 marks**

General Ability Test Syllabus for NDA Exam	
Subject	Topic
Physics	1. Physical Properties and States of Matter
	2. Modes of transference of Heat
	3. Mass, Weight, Volume, Sound waves and their properties
	4. Simple musical instruments
	5. Rectilinear propagation of Light
	6. Density and Specific Gravity
	7. Reflection and refraction
	8. Principle of Archimedes
	9. Spherical mirrors and Lenses
	10. Pressure Barometer
	11. Human Eye
	12. Motion of objects
	13. Natural and Artificial Magnets
	14. Velocity and Acceleration
	15. Properties of a Magnet
	16. Newton's Laws of Motion
	17. Earth as a Magnet
	18. Force and Momentum
	19. Static and Current Electricity
	20. Parallelogram of Forces
	21. Conductors and Non-conductors
	22. Stability and Equilibrium of bodies
	23. Ohm's Law
	24. Gravitation
	25. Simple Electrical Circuits
	26. Elementary ideas of work
	27. Heating, Lighting, and Magnetic effects of Current
	28. Power and Energy
	29. Measurement of Electrical Power
	30. Effects of Heat
	31. Primary and Secondary Cells
	32. Measurement of Temperature and Heat
	33. Use of X-Rays
	34. General Principles in the working of Simple Pendulum, Simple Pulleys, Siphon, Levers, Balloon, Pumps, Hydrometer, Pressure Cooker, Thermos Flask, Gramophone, Telegraphs, Telephone, Periscope, Telescope, Microscope, Mariner's Compass; Lightning Conductors, Safety Fuses.
Chemistry	1. Preparation and Preparation and Properties of Hydrogen, Oxygen, Nitrogen and Carbon Dioxide, Oxidation and Reduction.
	2. Acids, bases and salts
	3. Carbon – Different Forms
	4. Physical and Chemical Changes
	5. Fertilizers—Natural and Artificial

	6. Elements 7. Material used in the preparation of substances like Soap, Glass, Ink, Paper, Cement, Paints, Safety Matches, and Gunpowder 8. Mixtures and Compounds 9. Elementary ideas about the structure of Atom 10. Symbols, Formulae, and simple Chemical Equation 11. Atomic Equivalent and Molecular Weights 12. Law of Chemical Combination (excluding problems) 13. Valency 14. Properties of Air and Water
General Science	1. Common Epidemics, their causes, and prevention 2. Difference between the living and non-living 3. Food—Source of Energy for man 4. Basis of Life—Cells, Protoplasm, and Tissues 5. Constituents of food 6. Growth and Reproduction in Plants and Animals 7. Balanced Diet 8. Elementary knowledge of the Human Body and its important organs 9. The Solar System—Meteors and Comets, Eclipses. Achievements of Eminent Scientists
History	1. Forces shaping the modern world 2. Renaissance 3. Exploration and Discovery; 4. A broad survey of Indian History, with emphasis on Culture and Civilization 5. Freedom Movement in India 6. French Revolution, Industrial Revolution, and Russian Revolution 7. War of American Independence, 8. Impact of Science and Technology on Society 9. Elementary study of Indian Constitution and Administration

	10. Concept of one World 11. Elementary knowledge of Five-Year Plan of India 12. United Nations, 13. Panchsheel 14. Panchayati Raj, Democracy, Socialism and Communist 15. Role of India in the present world 16. Co-operatives and Community Development 17. Bhoodan, Sarvodaya, 18. National Integration and Welfare State 19. Basic Teachings of Mahatma Gandhi
Geography	1. The Earth, its shape and size 2. Ocean Currents and Tides Atmosphere and its composition 3. Latitudes and Longitudes 4. Temperature and Atmospheric Pressure, Planetary Winds, Cyclones, and Anticyclones; Humidity; Condensation and Precipitation 5. Concept of time 6. Types of Climate 7. International Date Line 8. Major Natural Regions of the World 9. Movements of Earth and their effects 10. Regional Geography of India 11. Climate, Natural vegetation. Mineral and Power resources 12. Location and distribution of agricultural and Industrial activities 13. Origin of Earth. Rocks and their classification 14. Important Sea ports and main sea, land, and air routes of India 15. Weathering—Mechanical and Chemical, Earthquakes and Volcanoes 16. Main items of Imports and Exports of India