



# CADETS DEFENCE ACADEMY

<b>General Ability Test Syllabus for NDA Exam</b>	
<b>Subject</b>	<b>Topic</b>
<b>Physics</b>	<ol style="list-style-type: none"><li>1. Physical Properties and States of Matter</li><li>2. Modes of transference of Heat</li><li>3. Mass, Weight, Volume, Sound waves and their properties</li><li>4. Simple musical instruments</li><li>5. Rectilinear propagation of Light</li><li>6. Density and Specific Gravity</li><li>7. Reflection and refraction</li><li>8. Principle of Archimedes</li><li>9. Spherical mirrors and Lenses</li><li>10. Pressure Barometer</li><li>11. Human Eye</li><li>12. Motion of objects</li><li>13. Natural and Artificial Magnets</li><li>14. Velocity and Acceleration</li><li>15. Properties of a Magnet</li><li>16. Newton's Laws of Motion</li><li>17. Earth as a Magnet</li><li>18. Force and Momentum</li><li>19. Static and Current Electricity</li><li>20. Parallelogram of Forces</li><li>21. Conductors and Non-conductors</li><li>22. Stability and Equilibrium of bodies</li><li>23. Ohm's Law</li><li>24. Gravitation</li><li>25. Simple Electrical Circuits</li><li>26. Elementary ideas of work</li><li>27. Heating, Lighting, and Magnetic effects of Current</li><li>28. Power and Energy</li><li>29. Measurement of Electrical Power</li><li>30. Effects of Heat</li><li>31. Primary and Secondary Cells</li><li>32. Measurement of Temperature and Heat</li><li>33. Use of X-Rays</li><li>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.</li></ol>
<b>Chemistry</b>	<ol style="list-style-type: none"><li>1. Preparation and Preparation and Properties of Hydrogen, Oxygen, Nitrogen and Carbon Dioxide, Oxidation and Reduction.</li><li>2. Acids, bases and salts</li><li>3. Carbon – Different Forms</li></ol>

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	<ol style="list-style-type: none"><li>4. Physical and Chemical Changes</li><li>5. Fertilizers—Natural and Artificial</li><li>6. Elements</li><li>7. Material used in the preparation of substances like Soap, Glass, Ink, Paper, Cement, Paints, Safety Matches, and Gunpowder</li><li>8. Mixtures and Compounds</li><li>9. Elementary ideas about the structure of Atom</li><li>10. Symbols, Formulae, and simple Chemical Equation</li><li>11. Atomic Equivalent and Molecular Weights</li><li>12. Law of Chemical Combination (excluding problems)</li><li>13. Valency</li><li>14. Properties of Air and Water</li></ol>
<b>General Science</b>	<ol style="list-style-type: none"><li>1. Common Epidemics, their causes, and prevention</li><li>2. Difference between the living and non-living</li><li>3. Food—Source of Energy for man</li><li>4. Basis of Life—Cells, Protoplasm, and Tissues</li><li>5. Constituents of food</li><li>6. Growth and Reproduction in Plants and Animals</li><li>7. Balanced Diet</li><li>8. Elementary knowledge of the Human Body and its important organs</li><li>9. The Solar System—Meteors and Comets, Eclipses. Achievements of Eminent Scientists</li></ol>
<b>History</b>	<ol style="list-style-type: none"><li>1. Forces shaping the modern world</li><li>2. Renaissance</li><li>3. Exploration and Discovery;</li><li>4. A broad survey of Indian History, with emphasis on Culture and Civilization</li><li>5. Freedom Movement in India</li><li>6. French Revolution, Industrial Revolution, and Russian Revolution</li><li>7. War of American Independence,</li><li>8. Impact of Science and Technology on Society</li></ol>

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	<ol style="list-style-type: none"><li>9. Elementary study of Indian Constitution and Administration</li><li>10. Concept of one World</li><li>11. Elementary knowledge of Five-Year Plan of India</li><li>12. United Nations,</li><li>13. Panchsheel</li><li>14. Panchayati Raj, Democracy, Socialism and Communist</li><li>15. Role of India in the present world</li><li>16. Co-operatives and Community Development</li><li>17. Bhoodan, Sarvodaya,</li><li>18. National Integration and Welfare State</li><li>19. Basic Teachings of Mahatma Gandhi</li></ol>
<b>Geography</b>	<ol style="list-style-type: none"><li>1. The Earth, its shape and size</li><li>2. Ocean Currents and Tides Atmosphere and its composition</li><li>3. Latitudes and Longitudes</li><li>4. Temperature and Atmospheric Pressure, Planetary Winds, Cyclones, and Anticyclones; Humidity; Condensation and Precipitation</li><li>5. Concept of time</li><li>6. Types of Climate</li><li>7. International Date Line</li><li>8. Major Natural Regions of the World</li><li>9. Movements of Earth and their effects</li><li>10. Regional Geography of India</li><li>11. Climate, Natural vegetation. Mineral and Power resources</li><li>12. Location and distribution of agricultural and Industrial activities</li><li>13. Origin of Earth. Rocks and their classification</li><li>14. Important Sea ports and main sea, land, and air routes of India</li><li>15. Weathering—Mechanical and Chemical, Earthquakes and Volcanoes</li><li>16. Main items of Imports and Exports of India</li></ol>
<b>Current Events</b>	

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NDA Mathematics Syllabus	
Topic	Sub Topic
Algebra	<ol style="list-style-type: none"><li>1.Sets (Concepts &amp; Operations)</li><li>2.Venn diagram</li><li>3.De Morgan's Law</li><li>4.Cartesian Product</li><li>5.Relation</li><li>6.Equivalence Relation</li><li>7.Real Numbers</li><li>8.Complex Numbers</li><li>9.Modulus</li><li>10.Cube Root</li><li>11.Conversion of a number (Binary to Decimal &amp; Decimal to Binary)</li><li>12.Arithmetic</li><li>13.Geometric and Harmonic Progressions</li><li>14.Quadratic Equations</li><li>15.Linear Inequations</li><li>16.Permutation and Combination</li><li>17.Binomial Theorem</li><li>18.Logarithms</li></ol>
Calculus	<ol style="list-style-type: none"><li>1.Concept of a real valued function</li><li>2.Domain</li><li>3.Range and Graph of a function</li><li>4.Composite functions</li><li>5.One to One</li><li>6.Onto and Inverse Functions</li><li>7.Notion of limit</li><li>8.Standard limits</li><li>9.Continuity of functions</li><li>10.Algebraic Operations on Continuous functions</li><li>11.Derivative of function at a point</li><li>12.Geometrical and Physical Interpretation of a derivative application</li><li>13.Derivatives of sum</li><li>14.Product and Quotient of functions</li><li>15.Derivative of a function with respect to another function</li><li>16.Derivative of a Composite Function</li><li>17.Second Order Derivatives</li><li>18.Increasing and Decreasing Function</li><li>19.Application of Derivatives in problems of Maxima and Minima</li></ol>
Matrices and Determinants	<ol style="list-style-type: none"><li>1.Types of matrices</li><li>2.Operations on matrices</li><li>3.Determinant of a matrix</li></ol>

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	<ol style="list-style-type: none"><li>4. Basic Properties of Determinants</li><li>5. Adjoint and Inverse of a Square Matrix</li><li>6. Applications-Solution of a system of Linear Equations in two or three unknown by –<ol style="list-style-type: none"><li>1. Cramer's Rule</li><li>2. Matrix Method</li></ol></li></ol>
<b>Integral Calculus and Differential Equations</b>	<ol style="list-style-type: none"><li>1. Integration as inverse of differentiation</li><li>2. Integration by substitution and by parts</li><li>3. Standard Integrals involving algebraic Expressions</li><li>4. Trigonometric</li><li>5. Exponential and Hyperbolic Functions</li><li>6. Evaluation of definite Integrals – Determination of areas of plane regions bounded by curves-applications</li><li>7. Definition of order and degree of a differential equation by examples.</li><li>8. General and particular solution of differential equations</li><li>9. Solution of first order and first-degree differential equations of various types by examples</li><li>10. Application in problems of growth and decay</li></ol>
<b>Trigonometry</b>	<ol style="list-style-type: none"><li>1. Angles and their measures in degrees and in radius</li><li>2. Trigonometric Ratio</li><li>3. Trigonometric Identities</li><li>4. Sum and Difference Formulae</li><li>5. Multiple and Sub-Multiple Angles</li><li>6. Inverse Trigonometric Functions</li><li>7. Applications – Height and Distance</li><li>8. Properties of Triangles</li></ol>
<b>Vector Algebra</b>	<ol style="list-style-type: none"><li>1. Vectors in two and three dimensions</li><li>2. Magnitude and Direction of a vector</li><li>3. Unit and Null Vectors</li><li>4. The Addition of Vectors</li><li>5. Scalar Multiplication of a Vector</li><li>6. Scalar Product</li><li>7. Dot Product of two vectors</li><li>8. Vector product or Cross product of two vectors</li><li>9. Applications- Work done by Force and Moment of a Force in Geometrical Problems.</li></ol>
<b>Analytical Geometry of Two or Three Dimension</b>	<ol style="list-style-type: none"><li>1. Rectangular Cartesian Coordinate System</li><li>2. Distance Formula</li><li>3. Equation of a line in various forms</li><li>4. The angle between two lines</li></ol>

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	<ol style="list-style-type: none"><li>5.Distance of a point from a line</li><li>6.Equation of a circle in standard and in a general form</li><li>7.Standard forms of Parabola, Ellipse and Hyperbola</li><li>8.Eccentricity and Axis of a conic</li><li>9.Point in a three-dimensional space</li><li>10.The distance between two points</li><li>11.Direction, Cosines and Direction Ratio</li><li>12. Equation two points</li><li>13.Direction Cosines and direction ratios</li><li>14. Equation of a plane and a line in various forms</li><li>15.Angle between two lines and angle between two planes</li><li>16.Equation of a sphere</li></ol>
<b>Statistics and Probability</b>	<ol style="list-style-type: none"><li>1.Probability: Random experiment, outcomes, and associated sample space, events, mutually exclusive and exhaustive events, impossible and certain events</li><li>2.Union and Intersection of events. Complementary, elementary, and composite events</li><li>3.Definition of probability—classical and statistical—examples</li><li>4.Elementary theorems on probability-simple problems</li><li>5. Conditional probability, Bayes' theorem—simple problems</li><li>6. Random variable as function on a sample space</li><li>7.Binomial Distribution</li><li>8. Examples of random experiments giving rise to Binomial distribution</li></ol>

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