ANUPMA MALIK
2nd RANK
HCS 2016

other candidated selected in HCS

MANAV MALIK

SEEMA SAINI

PANKAJ DHANDA

WAKIL AHMAD

NDA EXAM 2020

PREPARATION TIPS | PATTERN |SYLLABUS

- **NDA 2020**
- **NDA (I)** Exam Date **:19th April 2020**
- **NDA (II)** Exam Date **: 6th September 2020**
- **Pattern | Syllabus | Imp Tips**

- **Gender, Age and Marital Status:**
- **Gender:** Only **males** are eligible to apply.
- **Age:** Applying candidate's age must be between **16.5 – 19.5** years. He must be born between **July 2, 2001 and July 1, 2004** for NDA I.
- For NDA II, he must be born between **2nd January 2002 and 1st January 2005**.
- **Marital Status:** Applying candidate must be **unmarried**. Candidates cannot marry until completing their training.

- **Educational Qualification:**
- **For Air Force and Naval Wings (Cadet Entry Scheme):** Applying candidates must have passed their **10th and 12th level** exams from a recognized board or university with the main subjects of **Physics and Mathematics**.
- **For Army Wing of National Defense Academy:** Candidates must have passed their **10th and 12th level** exams from a recognized board or university.
- **Appearing Candidates:** Those who are in their last year of qualifying year are also eligible to apply.

- UPSC has prescribed NDA syllabus.
- NDA examination is divided into **two papers** – **Mathematics** and **General Ability**.
- It aims to judge a candidate on his **logical ability** and **general awareness**.

- The **question paper** of Mathematics and PART B of General Ability test will be available in **both English and Hindi languages**.

- It is an **offline examination** i.e. pen and paper based test with **objective type questions**.

- **<u>Mathematics</u>**
- **PAPER I-** MATHEMATICS
- Total Marks :300 Marks
- Total No. of Questions: 120
- Marks awarded for **Correct answer2.5** marks
- Marks deducted for **wrong answer-0.85**
- Exam Duration2.5 Hours

- **General Ability**
- PAPER II- GENERAL ABILITY
- Total **Marks 600 marks**
- Total No. of Questions150
- No. of questions in English Section50
- No. Of questions in General knowledge Section100
- Maximum Marks for English200 marks
- Maximum Marks for G.K.400 marks
- Marks for Correct Answer4 marks in both sections
- Marks for Incorrect Answer-1.33 marks in both sections
- Exam Duration2.5 Hours

- **NDA 2019 Cut Off:**
- According to the previous trends, it is expected that the cut off for written test will be **342** and the final overall cut off will be **708**.

- **NDA Syllabus for Mathematics:**
- Algebra
- Matrices and Determinants
- Trigonometry
- Analytical Geometry of Two and Three Dimensions
- Differential CalculusIntegral
- Calculus and Differential Equations
- Vector Algebra
- Statistics and Probability

1. ALGEBRA

Concept of set, operations on sets, Venn diagrams. De Morgan laws, Cartesian product, relation, equivalence relation.

Representation of real numbers on a line. Complex numbers—basic properties, modulus, argument, cube roots of unity. Binary system of numbers. Conversion of a number in decimal system to binary system and vice-versa. Arithmetic, Geometric and Harmonic progressions. Quadratic equations with real coefficients. Solution of linear inequations of two variables by graphs. Permutation and Combination. Binomial theorem and its applications. Logarithms and their applications.

2. MATRICES AND DETERMINANTS :

Types of matrices, operations on matrices. Determinant of a matrix, basic properties of determinants. Adjoint and inverse of a square matrix, Applications-Solution of a system of linear equations in two or three unknowns by Cramer's rule and by Matrix Method.

3. TRIGONOMETRY :

Angles and their measures in degrees and in radians. Trigonometrical ratios. Trigonometric identities Sum and difference formulae. Multiple and Sub-multiple angles. Inverse trigonometric functions. Applications-Height and distance, properties of triangles.

4. ANALYTICAL GEOMETRY OF TWO AND THREE DIMENSIONS:

Rectangular Cartesian Coordinate system. Distance formula. Equation of a line in various forms. Angle between two lines. Distance of a point from a line. Equation of a circle in standard and in general form. Standard forms of parabola, ellipse and hyperbola. Eccentricity and axis of a conic. Point in a three dimensional space, distance between two points. Direction Cosines and direction ratios. Equation two points. Direction Cosines and direction ratios. Equation of a plane and a line in various forms. Angle between two lines and angle between two planes. Equation of a sphere.

5. DIFFERENTIAL CALCULUS :

Concept of a real valued function–domain, range and graph of a function. Composite functions, one to one, onto and inverse functions. Notion of limit, Standard limits—examples. Continuity of functions—examples, algebraic operations on continuous functions. Derivative of function at a point, geometrical and physical interpretation of a derivative—applications. Derivatives of sum, product and quotient of functions, derivative of a function with respect to another function, derivative of a composite function. Second order derivatives. Increasing and decreasing functions. Application of derivatives in problems of maxima and minima.

6. INTEGRAL CALCULUS AND DIFFERENTIAL EQUATIONS :

Integration as inverse of differentiation, integration by substitution and by parts, standard integrals involving algebraic expressions, trigonometric, exponential and hyperbolic functions.

Evaluation of definite integrals—determination of areas of plane regions bounded by curves—applications.

Definition of order and degree of a differential equation, formation of a differential equation by examples. General and particular solution of a differential equations, solution of first order and first degree differential equations of various types—examples.

Application in problems of growth and decay.

7. VECTOR ALGEBRA :

Vectors in two and three dimensions, magnitude and direction of a vector. Unit and null vectors, addition of vectors, scalar multiplication of a vector, scalar product or dot product of two vectors. Vector product or cross product of two vectors. Applications—work done by a force and moment of a force and in geometrical problems.

8. STATISTICS AND PROBABILITY :

Statistics : Classification of data, Frequency distribution, cumulative frequency distribution—examples. Graphical representation—Histogram, Pie Chart, frequency polygon—examples. Measures of Central tendency—Mean, median and mode. Variance and standard deviation—determination and comparison. Correlation and regression.

Probability : Random experiment, outcomes and associated sample space, events, mutually exclusive and exhaustive events, impossible and certain events. Union and Intersection of events. Complementary, elementary and composite events. Definition of probability—classical and statistical—examples. Elementary theorems on probability—simple problems. Conditional probability, Bayes' theorem—simple problems. Random variable as function on a sample space. Binomial distribution, examples of random experiments giving rise to Binominal distribution.

- **PAPER-II**
- **GENERAL ABILITY TEST**
- **(Code No. 02)**
- **(Maximum Marks—600)**
- **Part 'A'—ENGLISH**
- **(Maximum Marks—200)**
- The question paper in English will be designed to test the
- candidate's understanding of English and workman like use of
- words. The syllabus covers various aspects like : Grammar and
- usage, vocabulary, comprehension and cohesion in extended text
- to test the candidate's proficiency in English.
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- **Part 'B'—GENERAL KNOWLEDGE (Maximum Marks—400)**

- The question paper on General Knowledge will broadly
- cover the subjects : Physics, Chemistry, General Science, Social
- Studies, Geography and Current Events.
- - The syllabus given below is designed to indicate the scope of these
- subjects included in this paper. The topics mentioned are not to be
- regarded as exhaustive and questions on topics of similar nature
- not specifically mentioned in the syllabus may also be asked.
- Candidate's answers are expected to show their knowledge and
- intelligent understanding of the subject.

- **Section 'A' (Physics)**
- Physical Properties and States of Matter, Mass, Weight,
- Volume, Density and Specific Gravity, Principle of Archimedes,
- Pressure Barometer.
- Motion of objects, Velocity and Acceleration, Newton's
- Laws of Motion, Force and Momentum, Parallelogram of Forces,
- Stability and Equilibrium of bodies, Gravitation, elementary ideas
- of work, Power and Energy. Effects of Heat, Measurement of
- Temperature and Heat, change of State and Latent Heat, Modes of
- transference of Heat. Sound waves and their properties, Simple
- musical instruments. Rectilinear propagation of Light, Reflection
- and refraction. Spherical mirrors and Lenses, Human Eye.
- Natural and Artificial Magnets, Properties of a
- Magnet,
- Earth as a Magnet.
- Static and Current Electricity, conductors and Nonconductors,
- Ohm's Law, Simple Electrical Circuits, Heating,
- Lighting and Magnetic effects of Current, Measurement of
- Electrical Power, Primary and Secondary Cells, Use of X-Rays.
- General Principles in the working of the following:
- Simple Pendulum, Simple Pulleys, Siphon, Levers,
- Balloon, Pumps, Hydrometer, Pressure Cooker, Thermos Flask,
- Gramophone, Telegraphs, Telephone, Periscope, Telescope,
- Microscope, Mariner's Compass; Lightening Conductors, Safety
- Fuses.

- **Section 'B' (Chemistry)**
- Physical and Chemical changes. Elements, Mixtures
- and Compounds, Symbols, Formulae and simple Chemical
- Equations, Law of Chemical Combination (excluding problems).
- Properties of Air and Water.

- Preparation and Properties of Hydrogen, Oxygen,
- Nitrogen and Carbondioxide, Oxidation and Reduction. Acids,
- bases and salts. Carbon—different forms. Fertilizers—Natural and
- Artificial. Material used in the preparation of substances like Soap,
- Glass, Ink, Paper, Cement, Paints, Safety Matches and GunPowder.

- Elementary ideas about the structure of Atom, Atomic
- Equivalent and Molecular Weights, Valency.

- **Section 'C' (General Science)**

- Difference between the living and non-living. Basis of Life—Cells,
- Protoplasms and Tissues. Growth and Reproduction in Plants and
- Animals.
- Elementary knowledge of Human Body and its important organs.
- Common Epidemics, their causes and prevention.

- Food—Source of Energy for man. Constituents of food, Balanced
- Diet. The Solar System—Meteors and Comets, Eclipses.
- Achievements of Eminent Scientists.

- **Section 'D' (History, Freedom Movement etc.)**

- A broad survey of Indian History, with emphasis on Culture and
- Civilisation.
- Freedom Movement in India. Elementary study of Indian
- Constitution and Administration. Elementary knowledge of Five
- Year Plans of India. Panchayati Raj, Co-operatives and Community
- Development. Bhoodan, Sarvodaya, National Integration and
- Welfare State, Basic Teachings of Mahatma Gandhi.
- Forces shaping the modern world; Renaissance, Exploration
- and Discovery; War of American Independence. French Revolution,
- Industrial Revolution and Russian Revolution. Impact of Science
- and Technology on Society. Concept of one World, United Nations,
- Panchsheel, Democracy, Socialism and Communism. Role of India
- in the present world.

- **Section 'E' (Geography)**

- The Earth, its shape and size. Lattitudes and Longitudes,
- Concept of time. International Date Line. Movements of Earth and
- their effects. Origin of Earth. Rocks and their
- classification; Weathering—Mechanical and Chemical,
- Earthquakes and Volcanoes. Ocean Currents and Tides
- Atmosphere and its composition; Temperature and Atmospheric
- Pressure, Planetary Winds, Cyclones and Anti-cyclones; Humidity;
- Condensation and Precipitation; Types of Climate, Major Natural
- regions of the World. Regional Geography of India— Climate,
- Natural vegetation. Mineral and Power resources; location and
- distribution of agricultural and Industrial activities. Important Sea
- ports and main sea, land and air routes of India. Main items of

- Imports and Exports of India.

- **Section 'F' (Current Events)**

- Knowledge of Important events that have happened in
- India in the recent years. Current important world events.
- Prominent personalities—both Indian and International including
- those connected with cultural activities and sports.
- NOTE : Out of maximum marks assigned to part 'B' of this paper,
- questions on Sections 'A', 'B', 'C', 'D', 'E' and 'F' will carry
- approximately 25%, 15%, 10%, 20%, 20% and 10% weightages
- respectively.

- **Intelligence and Personality Test**

- The SSB procedure consists of two stage Selection process
- - stage I and stage II. Only those candidates who clear the stage I
- are permitted to appear for stage II. The details are :

- (a) Stage I comprises of Officer Intelligence Rating (OIR) tests are
- Picture Perception * Description Test (PP&DT). The candidates
- will be shortlisted based on combination of performance in OIR
- Test and PP&DT.

- (b) Stage II Comprises of Interview, Group Testing Officer Tasks,
- Psychology Tests and the Conference. These tests are conducted
- over 4 days. The details of these tests are given on the website
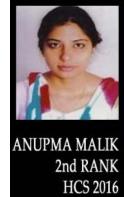- joinindianarmy.nic.in.
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- The personality of a candidate is assessed by three
- different assessors viz. The Interviewing Officer (IO), Group
- Testing Officer (GTO) and the Psychologist. There are no separate
- weightage for each test. The mks are allotted by assessors only
- after taking into consideration the performance of the candidate
- holistically in all the test. In addition, marks for Conference are
- also allotted based on the initial performance of the Candidate in
- the three techniques and decision of the Board. All these have
- equal weightage.

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- The various tests of IO, GTO and Psych are designed to
- bring out the presence/absence of Officer Like Qualities and their
- trainability in a candidate. Accordingly candidates are
- Recommended or Not Recommended at the SSB.

- # **NDA 2020 Selection Procedure (SSB Interview)**
- After the written test of NDA 2020, candidates qualifying the exam successfully as per the prescribed qualifying marks will be called for the SSB interview round. The SSB interview will be conducted in **various rounds in five days** and all the selected candidates have to appear in all the rounds.
- Candidates on the **first day** of SSB Interview will go through **psychological tests** which will include – Picture Perception and Description Test (PPDT), Intelligence test and filling up of Personal Information Questionnaire (PIQ) forms.
- **Second day** of SSB interview will include the tests related to – Word Association test, situation reaction test, thermatic apperception test and self-description test.
- **Third day** of interview will be related to Group Discussion Test, Millitary Planning Exercise, Lecturettes, Intergroup Obstacle race or Snake race, Progressive Group Task, half group task, command task and personal interview for some candidates by the President.
- The **fourth and fifth day** will include tests related to Individual Obstacles, Final Group Task , Interview for remaining candidates, final board conference and announcement of results.