

APPENDIX-I

(The Scheme and Syllabus of Examination)

A. SCHEME OF EXAMINATION

1. The subjects of the written examination, the time allowed and the maximum marks allotted to each subject will be as follows:—

Subject	Code	Duration	Maximum Marks
Mathematics	01	2½ Hours	300
General Ability Test	02	2½ Hours	600
Total			900
SSB Test/Interview:			900

2. THE PAPERS IN ALL THE SUBJECTS WILL CONSIST OF OBJECTIVE TYPE QUESTIONS ONLY. THE QUESTION PAPERS (TEST BOOKLETS) OF MATHEMATICS AND PART “B” OF GENERAL ABILITY TEST WILL BE SET BILINGUALLY IN HINDI AS WELL AS ENGLISH.

3. In the question papers, wherever necessary, questions involving the metric system of Weights and Measures only will be set.

4. Candidates must write the papers in their own hand. In no circumstances will they be allowed the help of a scribe to write answers for them.

5. The Commission have discretion to fix qualifying marks in any or all the subjects at the examination.

6. The candidates are not permitted to use calculator or Mathematical or logarithmic table for answering objective type papers (Test Booklets). They should not therefore, bring the same inside the Examination Hall.

B. SYLLABUS OF THE EXAMINATION

PAPER-I

MATHEMATICS

(Code No. 01)

(Maximum Marks-300)

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.

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 Non-conductors, 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 Gun-Powder

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, Protoplasm 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. Latitudes 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 and 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 www.joinindianarmy.nic.in.

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 marks are allotted by assessors only after taking into consideration the performance of the candidate holistically in all the tests. 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.

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.

APPENDIX- II

Special Instructions to Candidates for objective type tests

1. Articles permitted inside Examination Hall

Clip board or hard board (on which nothing is written) a good quality Black Ball Pen for marking responses on the Answer Sheet. Answer Sheet and sheet for rough work will be supplied by the invigilator.

2. Articles not permitted inside Examination Hall

Do not bring into the Examination Hall any article other than those specified above e.g. any valuable/costly items, mobile phones, Smart/Digital watches other IT Gadgets, books, bag, notes, loose sheets, electronic or any other type of calculators, mathematical and drawing instruments, Log Tables, stencils of maps, slide rules, Test Booklets and rough sheets pertaining to earlier session(s) etc.

Possession (even in switch off mode)/use of Mobiles phones, Bluetooth, pagers or any other communication devices or any other incriminating material (notes on e-admit card, papers, eraser etc.) are not allowed inside the premises where the examination is being conducted. Any infringement of these instructions shall entail disciplinary action including ban from future examinations.

Candidates are advised in their own interest not to bring any of the banned items including mobile phones/Bluetooth/pagers to the venue of the examination, as NO arrangements for safekeeping will be made at the venue of the examination. Candidates are advised not to bring any valuable/costly

items to the Examination Halls, as no arrangement for safe keeping of the same will be made at the venue of the examination. Commission will not be responsible for any loss in this regard.

3. Penalty for wrong Answers

THERE WILL BE PENALTY (NEGATIVE MARKING) FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.

- (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate. **One third (0.33)** of the marks assigned to that question will be deducted as penalty.
- (ii) If a candidate given more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above for that question.
- (iii) If a question is left blank i.e. no answer is given by the candidate, there will be **no penalty** for that question.

4. Unfair means strictly prohibited

No candidate shall copy from the papers of any other candidate nor permit his/her papers to be copied nor give nor attempt to give nor obtain nor attempt to obtain irregular assistance of any description.

5. Conduct in Examination Hall

No candidate should misbehave in any manner or create disorderly scene in the Examination Hall or harass the staff employed by the Commission for the conduct of the examination. Any such misconduct will be severely penalised.

6. Answer Sheet particulars

- (i) Write with Black ball pen your Centre and subject followed by test booklet series (in bracket), subject code and roll number at the appropriate space provided on the answer sheet at the top. Also encode your booklet series (A, B, C, or D as the case may be), subject code and roll number in the circles provided for the purpose in the answer sheet. The guidelines for writing the above particulars and for encoding the above particulars are given in Annexure. In case the booklet series is not printed on the test booklet or answer sheet is un-numbered, please report immediately to the invigilator and get the test booklet/answer sheet replaced.
- (ii) Candidates should note that any omission/mistakes/discrepancy in encoding/filling of details in the OMR answer sheet, especially with regard to Roll Number and Test Booklet Series Code, will render the answer sheet liable for rejection.
- (iii) Immediately after commencement of the examination please check that the test booklet supplied to you does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet of the same series and subject.

7. Do not write your name or anything other than the specific items of information asked for, on the answer sheet/test booklet/sheet for rough work.

8. Do not fold or mutilate or damage or put any extraneous marking in the Answer Sheet. Do not write anything on the reverse of the answer sheet.

9. Since the answer sheets will be evaluated on computerised machines, candidates should exercise due care in handling and filling up the answer sheets. **They should use black ball pen only to darken the circles. For writing in boxes, they should use black ball pen. Since the entries made by the candidates by darkening the circles will be taken into account while evaluating the answer sheets on computerised machines, they should make these entries very carefully and accurately.**

10. Method of marking answers

In the 'OBJECTIVE TYPE' of examination, you do not write the answers. For each question (hereinafter referred to as "Item") several suggested answers (hereinafter referred to as "Responses") are given. You have to choose one response to each item. The question paper will be in the Form of TEST BOOKLET. The booklet will contain item bearing numbers 1, 2, 3.....etc. Under each item, Responses marked (a), (b), (c), (d) will be given. Your task will be to choose the correct response. If you think there is more than one correct response, then choose what you consider the best response.

In any case, for each item you are to select only one response, if you select more than one response, your response will be considered wrong.

In the Answer Sheet, Serial Nos. From 1 to 160 are printed. Against each numbers, there are circles marked (a), (b), (c) and (d). After you have read each item in the Test Booklet and decided which one of the given responses is correct or the best. **You have to mark your response by completely blackening with black ball pen to indicate your response.**

For example, if the correct answer to item 1 is (b), then the circle containing the letter (b) is to be completely blackened with black ball pen as shown below :-

Example : (a) ● (c) (d)

11. Entries in Scannable Attendance List.

Candidates are required to fill in the relevant particulars with **black ball pen** only against their columns in the Scannable Attendance List, as given below.

- i) Blacken the circle (P) under the column (Present/Absent)
- ii) Blacken the relevant circle for Test Booklet Series
- iii) Write Test Booklet Serial No.
- iv) Write the Answer Sheet Serial No. and also blacken the Corresponding circles below.
- v) Append signature in the relevant column.

12. Please read and abide by the instructions on the cover of Test Booklet. If any candidate indulges in disorderly or improper conduct he/she will render himself/herself liable for disciplinary action and/or imposition of a penalty as the Commission may deem fit.