UNDERGRADUATE PROGRAMMES

Candidates can refer to the various syllabi, depending on the subject combination they have chosen for the Entrance Test, as indicated in their application forms.

There will be negative marking for all multiple choice questions.

ADMISSIONS TEST SYLLABUS

The admission test syllabus is based on XI/XII std of CBSE. The question paper will be of Multiple Choice type. There will be proportionate negative marking.

GENERAL ENGLISH – Compulsory for all Undergraduate Programmes

› Comprehension of Unseen Passage: Prose and Poetry.
› Vocabulary: Antonyms, Synonyms, One-word Substitutes, Pairs of Words Often Confused
› Grammar: Tenses, Prepositions, Phrasal Verbs, Voice(s), ‘too’ – enough; ‘since’ and ‘for’
› Structure: Reported Speech, Spellings, Punctuation, Correction of Sentences
› Composition: Re-ordering or re-arranging of sentences to form a coherent whole, guided composition, paragraph writing, letter writing.

MATHEMATICS

Complex numbers and their properties.
› Trigonometry: Trigonometric functions – Graphs – Periodicity, Trigonometric ratios of compound angles, multiple and sub-multiple angles, Transformations, Trigonometric equations, Inverse trigonometric functions, Hyperbolic and inverse hyperbolic functions, properties of triangles, Heights and distances.
› Vector Algebra: Algebra of vectors – angle between two non zero vectors, Scalar and Vector product of two vectors, Scalar and vector triple products.
› Statistics: Measures of dispersion; Range, mean deviation, variance and standard deviation of ungrouped/grouped data
Analysis of frequency distributions with equal means but different variances
› Probability: Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events, Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events.
Conditional probability, multiplication theorem on probability.

independent events, total probability, Baye’s theorem, Random variable and its probability distribution, mean and variance of random variable. Repeated independent (Bernoulli) trials and Binomial distribution.
› Coordinate Geometry: Locus – Translation and rotation of axes, straight line, pair of straight lines, circle and system of circles, Conics – Parabola – Ellipse – Hyperbola, Equation of tangent, normal and polar at any point of these conics. Polar coordinates, Coordinate in three dimensions – distance between two points in the space.
› Calculus: Limits – Continuity, Differentiation – Methods of differentiation, Applications of differentiation, Partial differentiation, Integration – methods of Integration, Definite integrals.

PHYSICS

› Mechanics: Units and Measurement; Description of Motion in one dimension; Description of Motion in two and three dimensions; Laws of Motion; Work, Energy and power; Rotational Motion and Moment of Inertia; Gravitation; Solids and Fluids, Elasticity, Surface tension
› Oscillations, Waves, Heat & Thermodynamics and Optics: Oscillations; Waves, Sound; Heat & Thermodynamics; Transference of Heat; Ray Optics; Wave Optics; Electromagnetic Waves.
› Electricity and Magnetism: Electrostatics; Current Electricity; Thermal and Chemical effects of Currents; Magnetic effects of Currents, Magneto statics; Electromagnetic Induction and Alternating Currents.
› Modern Physics: Electrons and Photons; Atoms, Molecules and Nuclear; Solids and Semi-Conductor Devices.

CHEMISTRY


BOTANY

› Plant Kingdom: Five kingdom classification major groups and their salient features. Bacteria, Fungi, Bryophytes, Pteridophytes, Gymnosperm.
› Morphology: Structural organization of stem, leaf and root and their modifications (Stem-climber, Rhizome, tuber, bulb, corm; leaf - foliage, scale and bract; root - tap and adventitious roots) in dicot and monocot plants.
Anatomy: Tissues - Parenchyma, collenchyma, sclerenchyma, xylem, phloem. Anatomy of root, stem and leaf of monocot and dicot plants.

Embryology: Structure and function of flower, Infloroscence (Racemose, cymose and special types) Androecium (Anther structure, microsporangium, microsporogenesis and male gametophyte), Gynoecium (Ovule - structure, mega sporangium, megasporogenesis, female gametophyte), Pollination, (Self and cross pollination), Anemophily, Entomophilites, Hydrophily, Zoophily, Fertilization, Fruits (Simple, aggregate and multiple fruits).

Physiology: Water absorption, Ascent of sap, Transpiration (Exchange of gases, stomatal mechanism), Respiration (Glycolysis, Krebs cycle, electron transport system), Photosynthesis (Light reaction, Dark reaction (Calvin cycle), factors affecting photosynthesis - light, temperature and Carbon dioxide). Growth (Plant hormones and growth regulation) and movements (Turgor and growth movements), Mineral nutrition (essential and non-essential elements) in plants.

Applied Botany: Plant breeding - mutation, hybridization, polyploidy. Use of fertilizers and pesticides (advantages and hazards).

Cell Biology: Cell theory, Prokaryotic, Eukaryotic cell, Cell wall, cell membrane and cell organelles, Plastsids, mitochondria, endoplasmic reticulum, golgi bodies, ribosome, lysosome, nucleus and chromosomes, Mitosis, Meiosis.

Ecology: Organism and population, Ecological adaptation, Ecosystem: Components, types, energy flow, nutrient cycling.

ZOONOLOGY

Diversity of living organisms: Classification of animals, salient features of non-chordata upto phyla level, chordate to class level.

Anatomy, histology and physiology (Earthworm, cockroach, Frog and Human): Integumentary system, digestive system, respiratory system, circulatory system, excretory system, Muscular system, nervous system, endocrine system and reproductive system, connective tissue, epithelial tissue, small intestine, Histology of stomach, bone, blood, lymph, liver, pancreas, lung, spleen, kidney, skin, testis and ovary.

Developmental Biology: Basic features of vertebrate development, Gametogenesis, fertilisation, cleavage, blastulation.

Genetics: Mendel’s laws of inheritance, Chromosome theory of inheritance, incomplete dominance, co-dominance, deviations from Mendelian ratios, multiple alleles, sex determination, linkage or crossing over, Mendelian disorder, chromosomal disorders, DNA and RNA replication, transcription genetic code, gene expression, regulation and human genome project, DNA finger print.


COMMERCE

Business Organization and Principles of Management:

ECONOMICS

- Consumption: Meaning of wants - Utility - Laws of demand -
Elasticity of demand- Indifference Curve Analysis-Consumer equilibrium.

- Production: Supply- Law of variable proportions - Cost and Revenue concepts- Economies of scale (large scale and small scale production)- Returns to Scale.
- Distribution: Factor Pricing-derived demand- The concepts of Rent, Wages, Interest and Profit.
- Macro economics: Aggregate demand – Aggregate supply-Elastic demand- Equilibrium level of income - Propensity to consume- Propensity to save and invest - MEC – MEI- Multiplier-Accelerator (only concepts).

CIVICS

- Civics - Meaning and scope; Aims and value of its study; its relationship with History, Political Science, Economics and Ethics.
- Individual and his relationship with family and society, Society - meaning and advantages of social life; Role of various Associations, eg., Religious, Political, Economic and Cultural.
- Citizenship - meaning and importance: Single and dual citizenship - advantages and disadvantages; Rights and Duties of Citizens; Hindrances to good citizenship.
- Nation - meaning and importance: Nationality, meaning and elements. India as a Nation.
- State and its essential elements; Population; Territory; Government and Sovereignty. Definition of the term sovereignty - nature, characteristics and coercive nature of the State.
- Individual and the Modern State (Basic concepts):
  - (a) Law - meaning, characteristics, sources - law and morality, (b) Liberty - meaning and kinds; Law and Liberty, (c) Equality - meaning and kinds; Relation between liberty and equality, (d) Fraternity - meaning - need for co-operation and co-existence of individuals for common good.
  - Liberty - meaning and kinds; Law and Liberty
  - Forms of Government; Unitary and Federal, Parliamentary and Presidential - characteristics - merits and demerits. (Provide stress on the functions of the Legislature, Executive and Judiciary)
  - Spheres of State activity, Individualism, socialism, communism, capitalism and dictatorship.
  - Democracy: meaning - kinds - features - merits and demerits of direct and indirect democracy; conditions necessary the success of democracy; role of parties and public opinion in democracy.
  - Constitution of India: Brief study of the features as given below:
    - (a) Preambe, (b) Fundamental rights, (c) Directive principles of State Policy, (d) Federal System, (e) Parliamentary features.
  - Govt. of India:
    - (a) Parliament, (b) Cabinet, (c) All India Services, (d) State Legislatures and Cabinet, (e) Centre-State relations - Administrative, Legislative and Financial.
  - Structure and working of Local Governments (Brief Study)
    - (a) Corporations and Municipalities, (b) Panchayat Raj, (c) Zilla Parishads and Mandal Parishads, (d) The role of District Collectors.
  - Adult Franchise: Meaning and working. Advantages and disadvantages; Development of Weaker Sections.
  - National Integration and its need:
    - (a) Communalsim, (b) Casteism, (c) Linguism, (d) Regionalism.
  - United Nations - its aims and principal organs. Its role in promoting international peace and understanding.

POLITICAL SCIENCE

- Political Science - meaning, nature and scope
- Citizen - State and Society; Citizenship - Rights and duties of citizens (a brief study of the fundamental rights and fundamental duties of Indian citizens).
- State and Government: Nature and definition of State; Elements of state; State and Society; State and Associations.
- Nation and Nationality: Meaning of the terms Nation and Nationality; Elements of Nationality; Nationalism - meaning, importance, merits and demerits.
- Sovereignty - meaning, characteristics and kinds of sovereignty, legal, political and popular sovereignty.
- Law, Liberty and equality: Meaning of the terms Law and Liberty, Law and morality. Liberty and Law, Sources of Law, Kinds of Law; Definition of the term Liberty, Kinds of liberty; Equality - Definition of the term, kinds - liberty and equality.
- Forms of Government: Unitary and Federal - meaning, merits and demerits, Parliamentary and Presidential - explanation - merits and demerits of both systems.
- Spheres of State activity: Individualism, Socialism, Communism, Capitalism and Dictatorship, Gandhism and Sarvodaya.
- Constitution: Classification - Written and Unwritten, Rigid and Flexible - meaning - merits and demerits.
- Legislature: Organization, powers and functions of the legislature; A brief study of the organization, functions and working of Indian Parliament.
- Executive in India: President - election, powers and functions; Vice-President, Prime Minister and the Council of Ministers; Governor - appointment - powers and functions, Chief Minister and the Council of Ministers.
- Judiciary: Role and importance, Independence of Judiciary, Supreme Court and the High Courts in India.
- Civil Services: Nature - importance and functions of Civil Services; Bureaucracy, U.P.S.C., Organization and functions.
- Electorate: Types of franchise, Merits and Demerits, Direct Democratic systems.
- Party system: Political parties, their role and functions, Role of opposition in democracy.
- Public Opinion: Meaning - Agencies of public opinion, role and importance of Public Opinion.
- Local Self Government: Panchayat Raj, Municipal Govt., planning - importance - socio economic development - rural and urban development; development of scheduled castes and tribes.
- Factors conditioning Indian Democracy: Inequality - social and economic; Regional imbalance, communalism and casteism, Regionalism and Linguism.

HISTORY

- Introduction: Pre-history - The Stone Age:
  - (a) The Harappan Culture (b) The Vedic Period (c) Jainism and Buddhism
  - (a) The rise of the Magadha
  - (b) Age of the Mauryas: i) Chandragupta ii) Ashoka iii) Mauryan Administration
The Deccan:
(a) The Satavahanas - Gautamiputra Satakarni, (b) The Chalukya of Badami - Pulikesi II (c) The Rashtrakutas - Dhruba, Nritaputra
(d) The Pallavas – Narasimhavarman, (e) The Cholas - Chola Administration
Harshavardhana and his time - Medieval India
6. (a) Arabs in India - Muhammed-bin-Qasim
(b) Invasion of Mahmud Ghazni and Mahmud Ghor
(c) The Rajputs – Prithviraj
7. The Age of Vijayanagara Empire - Krishnadevaraya - The battle of Talikota
8. India under the Mughals:
(a) Sher Shah – Administration, (b) Age of Akbar, (c) Aurangzeb and the decline of the Mughal Empire (d) Mughal contribution to: (i) Art and Architecture (ii) Literature.
9. Rise of the Marathas - Shivaji - The Peshwas
(a) Baji Rao  (b) Baalaji Baji Rao
10. Advent of Europeans in India – Portuguese, Dutch, Danes, English and French.

SPECIAL ENGLISH

- Comprehension: Literary Prose and Poetry
- Vocabulary: Affixes, One-Word Substitutes, Sentence completion
- Grammar: Parts of Speech, Gender, Phrases / Clauses, Reported Speech
- Usage: Idioms, Proverbs, Figures of Speech, Correction of Sentences
- Guided Composition: Reordering Jumbled Sentences into a Narrative

B.B.A.

General English:
- Comprehension of Unseen Passage: Prose and Poetry.
- Vocabulary: Antonyms, Synonyms, One-word Substitutes, Pairs of Words Often Confused
- Usage: Idioms
- Grammar: Tenses, Prepositions, Phrasal Verbs, Voice(s), ‘too – enough’, ‘since’ and ‘for’
- Structure: Reported Speech, Spellings, Punctuation, Correction of Sentences
- Composition: Re-ordering or re-arranging of sentences to form a coherent whole, guided composition, paragraph writing, letter writing.

Numerical skills and Reasoning skills:
- Basic arithmetical operations
- Basic properties of numbers
- HCF & LCM
- Fractions
- Decimals
- Percentages
- Ratio & proportions
- Power & groups
- Simple Interest & Compound Interest
- Mensuration - Problem solving in Algebra
- Elementary Geometry
- Statistical tables & averages and logical reasoning.

INTEGRATED M.C.A.

General English:
- Comprehension of Unseen Passage: Prose and Poetry.
- Vocabulary: Antonyms, Synonyms, One-word Substitutes, Pairs of Words Often Confused
- Usage: Idioms
- Grammar: Tenses, Prepositions, Phrasal Verbs, Voice(s), ‘too – enough’, ‘since’ and ‘for’
- Structure: Reported Speech, Spellings, Punctuation, Correction of Sentences
- Composition: Re-ordering or re-arranging of sentences to form a coherent whole, guided composition, paragraph writing, letter writing.

Mathematics:

Part A: Algebra, Vectors, Linear Programming
- Real Numbers, Complex Numbers
- Polynomials, Linear Equations in one and two variables, Quadratic Equations in one variable, Permutations and Combinations, Binomial Theorem, Arithmetic Progression, Geometric Progression, Standard Progressions and Series
- Types of Vectors, Vector addition, Scalar multiplication, Scalar and Vector products of 2, 3 and 4 vectors
- Linear Inequalities, Linear Programming – Graphical Method

Part B: Mensuration, Geometry, Analytical Geometry
- Areas, Surface Areas and Volumes of standard plane and solid regions
- Euclid’s Axioms and Postulates, Lines, Angles, Triangles, Congruent Triangles, Quadrilaterals, Area, Circles, Similar Triangles
- Cartesian coordinate system for a plane, Distance formula, Section formula, Area of Triangle, Equations of a straight line, Equations of a plane, Conic Sections
- Cartesian coordinate system for space, Direction Cosines, Direction Ratios, Lines and Planes in Space

Part C: Trigonometry, Calculus and Differential Equations
- Trigonometric Ratios, Identities, Trigonometric Functions of sum and difference of Angles, Trigonometric Equations
- Sets, Relations, Functions, Simple problems on Limits, Continuity, Derivatives of First and Higher Order, Rules of Differentiation, Bernoulli Rule, Partial Derivatives of First order
- Indefinite Integral, Definite Integral, Rules of Integration, Applications of Integrals
- Ordinary Differential Equations, General and Particular Solutions, First Order Differential Equations – Classification and Solution, Second Order Homogeneous Differential Equations

Part D: Statistics and Probability
- Introduction to Statistics, Data Collection & presentation, Mean, Median, & Mode, Cumulative Frequency Distribution, Measures of Dispersion, Range, Mean Deviation, Standard Deviation,
The end of education is character
SRI SATHYA SAI BABA