

VITEEE syllabus

VITEEE MATHEMATICS (2024)

| Subject | Topics |
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| Matrices and their Applications | <ul style="list-style-type: none">• Algebra of Matrices• Determinants and their properties• Adjoint and Inverse of a Square Matrix• Rank• Test of Consistency and Solution of Linear Equations• Solution of Linear Programming Problem in Two Variables |
| Trigonometry and Complex Numbers | <ul style="list-style-type: none">• Trigonometric and Inverse Trigonometric Functions• Heights and Distances• Complex Number System• Ordered Pair Representation• Argand Diagram• Algebra of Complex Numbers• Modulus and Argument (Polar Form)• Solution of Polynomial Equations• Roots of a Complex Number |
| Analytical Geometry of two dimensions | <ul style="list-style-type: none">• Coordinate Geometry• Straight Lines• Conic Sections• Directrix, Focus, Latus-rectum• Parametric Form and Chords• Tangents and Normals• Chord of Contact of Tangents |
| Vector Algebra | <ul style="list-style-type: none">• Scalar and Vector Products• Scalar and Vector Triple Products |
| Analytical Geometry of Three Dimensions | <ul style="list-style-type: none">• Coordinates in Space• Distance between Two Points• Section Formula• Direction Ratios and Cosines• Angle between Intersecting Lines• Skew Lines and Shortest Distance• Equations of Line and Plane• Intersection of Line and Plane• Coplanar Lines |
| Differential Calculus | <ul style="list-style-type: none">• Limits, Continuity, Differentiability• Tangent, Normal, and Angle between Curves |

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| | <ul style="list-style-type: none"> ● Mean Value Theorem and its Variations ● Stationary Points, Extrema, Concavity ● Errors and Approximations |
| Integral Calculus and its Applications | <ul style="list-style-type: none"> ● Simple definite integrals ● Fundamental theorems of calculus, properties of definite ● Integrals, Reduction formula ● Area of bounded regions, length of the curves. |
| Differential Equations | <ul style="list-style-type: none"> ● Formation, order, and degree of differential equations. ● First Order Differential Equations |
| Probability and Distributions | <ul style="list-style-type: none"> ● Basics of Probability ● Random Variables ● Discrete Distributions |
| Discrete Mathematics | <ul style="list-style-type: none"> ● Sets ● Relations ● Functions ● Binary Operations ● Sequences and Series ● Mathematical Logic |

VITEEE CHEMISTRY(2024)

| Subject | Topics |
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| Inorganic and Material Chemistry | <ul style="list-style-type: none"> ● S-Block and p-Block Elements: Properties, reactivity, compounds. ● D-Block Elements: Characteristics, extraction, properties, comparison with actinides. ● Coordination Chemistry: Nomenclature, isomerism, theories, applications, bioinorganic compounds. ● Solid-State Chemistry: Lattice structures, crystal systems, packing, imperfections, X-ray diffraction, electrical properties, amorphous solids. ● Surface Chemistry: Adsorption, catalysis. |
| Physical Chemistry | <ul style="list-style-type: none"> ● Atomic Structure ● Emission and Absorption Spectra |

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| | <ul style="list-style-type: none"> • Chemical Bonding and Hybridization • Thermodynamics, Chemical Equilibrium, and Chemical Kinetics |
| Analytical Chemistry | <ul style="list-style-type: none"> • Electrochemistry: Redox reactions, conductance, Faraday's laws, conductance, cells, Nernst equation, corrosion. • Environmental Chemistry: Pollution (atmospheric, water, soil). |
| Basic Principles of Organic Chemistry | <ul style="list-style-type: none"> • Carbon and Organic Compounds: Tetravalency, hybridization, functional groups, nomenclature, reactions. • Isomerism: Structural and stereoisomerism. • Functional Group Analysis: Detection of functional groups. |
| Properties and Chemistry of Functionalized Organic Compounds | <ul style="list-style-type: none"> • Alcohols and Ethers: Nomenclature, classification, preparation, properties, uses. • Carbonyl Compounds: Nomenclature, preparation, properties, uses, reactions. • Carboxylic Acids and Derivatives: Nomenclature, preparation, properties, uses. |
| Organic Nitrogen Compounds | <ul style="list-style-type: none"> • Aliphatic and Aromatic Nitrogen Compounds: Preparation, properties, uses. |
| Biomolecules and Polymers | <ul style="list-style-type: none"> • Biomolecules: lipids, Carbohydrates, proteins, amino acids, and nucleic acids. • Polymers: Classification, polymerization methods, important polymers. |

VITEEE PHYSICS (2024)

| Topic | Description |
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| Mechanics and Properties of Matter | <ul style="list-style-type: none"> • Conservation of linear momentum • Laws of friction • Work done, kinetic energy • Elastic behavior, stress-strain relationship • Viscosity, Bernoulli's theorem. • Thermal expansion, specific heat |

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| | <p>capacity</p> <ul style="list-style-type: none"> ● Blackbody radiation. |
| Electrostatics | <ul style="list-style-type: none"> ● Charges, Coulomb's law ● Electric field, potential ● Electric flux, Gauss's law ● Capacitors, dielectrics ● Electric energy, capacitors in series/parallel. |
| Magnetic Effects of Electric and Electricity Current | <ul style="list-style-type: none"> ● Electric current, Ohm's law ● Electrical resistance, resistivity ● Kirchoff's law, Wheatstone's Bridge ● Magnetic field, Ampere's law ● Magnetic forces, magnetic dipole moment. |
| Electromagnetic Induction and Alternating Current | <ul style="list-style-type: none"> ● Electromagnetic induction, Faraday's law ● Inductance, self and mutual induction ● AC generator, transformer ● Alternating current, LCR series circuit. |
| Optics | <ul style="list-style-type: none"> ● Reflection, refraction, total internal reflection ● Lens formula, power ● Interference, diffraction ● Polarisation of light, double refraction. |
| Atomic, Dual Nature of Radiation, and Nuclear Physics | <ul style="list-style-type: none"> ● Electromagnetic waves, photoelectric effect ● Atomic structure, Rutherford's model ● Nuclear properties, radioactivity ● Nuclear fission, fusion. |
| Semiconductor Devices and their Applications | <ul style="list-style-type: none"> ● Semiconductor basics, P-N junction ● Diodes, transistors ● Logic gates, Boolean algebra. |

VITEEE BIOLOGY (2024)

| Topic | Description |
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| Taxonomy | <ul style="list-style-type: none"> ● Need for classification ● Systems of classification: Linnaean, Whittaker, Bentham, and Hooker ● Classification of non-chordates and chordates |
| Cell and Molecular Biology | <ul style="list-style-type: none"> ● Cell theory |

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| | <ul style="list-style-type: none"> ● Prokaryotic and Eukaryotic cells ● Cell cycle and division ● Genetic material: DNA, RNA - Replication, transcription, translation - Gene expression and regulation - DNA repair |
| Reproduction | <ul style="list-style-type: none"> ● Asexual and sexual reproduction ● Vegetative propagation ● Human reproductive system ● Fertilization, implantation, pregnancy, parturition ● Assisted reproductive technologies |
| Genetics and evolution | <ul style="list-style-type: none"> ● Chromosomes, inheritance ● Mendelian genetics, deviations ● Chromosomal theory of inheritance ● Evolutionary principles: Darwinism, neo-Darwinism, Hardy-Weinberg principle |
| Human health and diseases | <ul style="list-style-type: none"> ● Pathogens and diseases ● Immunology, vaccines, antibiotics ● Adolescence, drug and alcohol abuse |
| Biochemistry | <ul style="list-style-type: none"> ● Carbohydrates, lipids, proteins ● Enzymes and metabolism ● Glycolysis, fermentation, Krebs's cycle |
| Plant physiology | <ul style="list-style-type: none"> ● Transport processes ● Nutrient absorption, transpiration ● Photosynthesis, hormones ● Nitrogen cycle, biological nitrogen fixation |
| Human physiology | <ul style="list-style-type: none"> ● Digestion, respiration, circulation, excretion ● Endocrine, nervous, skeletal, and muscular systems ● Hormones and disorders |
| Biotechnology and its applications | <ul style="list-style-type: none"> ● Recombinant DNA technology - Genetically modified organisms ● Stem cell technology, gene therapy ● Plant and animal biotechnology, microbial applications |
| Biodiversity, ecology and environment | <ul style="list-style-type: none"> ● Ecosystems, biodiversity ● Conservation, endangered species ● Environmental issues, pollution control ● Climate change, population attributes |

VITEEE ENGLISH & APTITUDE (2024)

| Topic | Question Type |
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| Comprehension | Multiple Choice |
| English Grammar | Multiple Choice |
| Pronunciation | Multiple Choice |
| Data Interpretation | Multiple Choice |
| Data Sufficiency | Multiple Choice |
| Syllogism | Multiple Choice |
| Number Series | Multiple Choice |
| Clocks, Calendars, Directions | Multiple Choice |