

Examrace

JGEEBILS Syllabus 2021

Get top class preparation for competitive exams right from your home: **get questions, notes, tests, video lectures and more-** for all subjects of your exam.

For the better preparation of examination, applicants must have to prefer the syllabus, which consists of **Multiple Choice Questions** Coving Basics Only in;

- Physics
- Chemistry
- Maths
- Biology

Maths

- **Algebra:** Definitions and examples of groups (finite and infinite, commutative and non-commutative) , cyclic groups, subgroups, homomorphisms, quotients. Definitions and examples of rings and fields. Basic facts about vector spaces, matrices, determinants, ranks of linear transformations, characteristic and minimal polynomials, symmetric matrices. Integers and their basic properties. Inner products, positive definiteness
- **Analysis:** Basic facts about real and complex numbers, convergence of sequences and series of real and complex numbers, continuity, differentiability and Riemann integration of real valued functions defined on an interval (finite or infinite) , elementary functions (polynomial functions, rational functions, exponential and log, trigonometric functions) , sequences and series of functions and their different types of convergence, ordinary differential equations.
- **Geometry/Topology:** Elementary geometric properties of common shapes and figures in 2 and 3 dimensional Euclidean spaces (e. g. triangles, circles, discs, spheres, etc.) . Plane analytic geometry (= coordinate geometry) and trigonometry. Definition and basic properties of metric spaces, examples of subset Euclidean spaces (of any dimension) , connectedness, compactness. Convergence in metric spaces, continuity of functions between metric spaces.
- **General:** Pigeon-hole principle (box principle) , induction, elementary properties of divisibility, elementary combinatorics (permutations and combinations, binomial coefficients) , elementary probability theory, elementary reasoning with graphs.

Physics

- Classical Mechanics
- Mathematics relevant to Physics

- Electricity and Magnetism
- Quantum Mechanics
- Heat, Thermodynamics and Statistical Physics
- General Physics
- Modern Physics
- Electronics and Experimental Physics.

Chemistry

The questions are asked in the areas of physical, organic, inorganic, analytical, electro and quantum chemistry, biophysics, thermodynamics, spectroscopy (NMR, fluorescence, IR, UV and X-ray) , logic and statistics and mathematical methods. The syllabus for the Written test in Chemistry is similar to the typical standard syllabus followed in any Indian university for the BSc and MSc degree course.

Computer & Systems Sciences

- **Discrete Mathematics:** Sets and Relations, Combinatorics (Counting) and Elementary Probability Theory, Graph Theory, Propositional and Predicate Logic.
- Formal Languages, Automata Theory and Computability
- **Data Structures and Algorithms:** Arrays, Lists and Trees, Sorting and Searching, Graph algorithms, Complexity of problems and NP-completeness.
- **Fundamentals of Programming Languages and Compilers:** Control structures, Parameter passing mechanisms, Recursion, Parsing and type checking, Memory management.
- Operating Systems and Concurrency
- Switching Theory and Digital Circuits
- Theory of Databases
- Topics under System Science

Engineering Mathematics: Complex Analysis, Linear Algebra, Elementary Numerical Analysis, Basic Optimization Theory and Algorithms, Introduction to Probability Theory and Statistics.

Electrical and Computer Sciences: Introduction to Signals and Linear Systems Analysis, Control Systems, Digital Signal Processing, Basic Circuit Theory, Introduction to Digital Communications, Digital Computer Fundamentals, Introduction to Computer Programming.

