

# IIT-ROORKEE (JAM)

## JOINT ADMISSION TEST TO MCA

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### Eligibility

Bachelor's degree with Mathematics or BCA. At least 55% aggregate marks or CGPA of 6.25 on a 10-point scale for General category candidates (50% marks or 5.75 CGPA for SC/ST candidates) in the qualifying degree.

### Total Seats

Total seats are 42.

### Syllabus

#### MATHEMATICS :

**Algebra** : Set theory and its simple applications. Basic concepts of groups, fields and vector spaces.

**Matrices** : Rank of a matrix. Existence and uniqueness of solution of a system of linear equation. Eigen values and Eigen vectors. Inverse of a matrix by elementary transformations.

**Differential Calculus** : Differentiation, Partial differentiation, Taylor series and approximate calculations. Maxima and minima of functions of one and two variables.

**Integral Calculus** : Single and multiple integration. Definite integrals, Change of order and change of variables. Application to evaluation of area, surface and volume.

**Differential Equations** : First order differential equations, linear differential equations of higher order with constant coefficients.

**Vector Analysis** : Vector algebra, Gradient.

**Numerical Analysis** : Solution of non linear equations using iterative methods. Interpolation (Lagrange's formula and Newton's formulae for equidistant points). Numerical differentiation and integration (Trapezoidal and Simpson's rules)

**Probability** : Basic concepts of probability theory. Binomial and Poisson distributions.

**Linear Programming** : Formulation and its graphical solution for two variable problems.

#### COMPUTER AWARENESS

Elements of computers. Number systems. Basic electronic gates. Boolean algebra. Flip-Flops. Algorithmic approach to solve problems. Fundamentals of C language.

#### ANALYTICAL ABILITY AND GENERAL AWARENESS

Simple questions will be asked to test the analytical ability and general awareness of candidates.

**NOTE** : Weightages in the MCA Test Paper for Mathematics, Computer Awareness and Analytical Ability & General Awareness components will be in the ratio 4 : 2 : 1

**NIMS**  
**KANPUR**

**M.C.A. Entrance by RAM GOPAL SINGH**

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