

Syllabus for B.Sc(H) Mathematics Entrance Exam

Algebra and number theory:

Sets, operations on sets, relation and function. Prime numbers, factorization of integers and divisibility. Rational and irrational numbers. Permutations and combinations, Binomial Theorem. Logarithms. Polynomials: relations between roots and coefficients, Remainder Theorem, Theory of quadratic equations and expressions. Arithmetic and geometric progressions. Inequalities involving arithmetic, geometric & harmonic means. Complex numbers.

Geometry:

Class X level plane geometry. Geometry of 2 dimensions with Cartesian and polar coordinates, concept of a locus, equation of a line, angle between two lines, distance from a point to a line, area of a triangle, equations of circle, parabola, ellipse and hyperbola and equations of their tangents and normal. Vectors and 3-D geometry (Line and Plane).

Trigonometry:

Measures of angles, trigonometric and inverse trigonometric functions, trigonometric identities including addition formulae, solutions of trigonometric equations, properties of triangles, heights and distances.

Calculus:

Sequences - bounded sequences, monotone sequences, limit of a sequence. Functions - one-one functions, onto functions. Limit, continuity and differentiability of functions of a single real variable. Derivatives and methods of differentiation, slope of a curve, tangents and normals, maxima and minima, use of calculus in sketching graphs of functions. Methods of integration, definite and indefinite integrals with applications, evaluation of areas using integrals. Differential Equations, Formation of Differential Equation, Variable Separable, Reducible to Variable Separable, Homogeneous Equation, Linear Equation.

ENGLISH PROFICIENCY

Comprehension, Vocabulary, Basic English Grammar (like usage of correct forms of verbs, prepositions and articles), Word power, Synonyms and Antonyms, Meanings of words and phrases, Technical writing

GENERAL AWARENESS

Current Affairs of National and International Economy, History, Sports News, Science in everyday life, Politics, Geography, Culture, Economics, Trade Awareness, Personalities in News, Indian Constitution