

ISI Admission Test 2017

Syllabus for M. Math Programme

Test Code: PMB (Afternoon Session)

- Countable and uncountable sets;
 - equivalence relations and partitions;
 - convergence and divergence of sequence and series;
 - Cauchy sequence and completeness;
 - Bolzano-Weierstrass theorem;
 - continuity, uniform continuity, differentiability, Taylor Expansion;
 - partial and directional derivatives, Jacobians;
 - integral calculus of one variable – existence of Riemann integral,
 - fundamental theorem of calculus, change of variable, improper integrals;
 - elementary topological notions for metric spaces – open, closed and
 - compact sets, connectedness, continuity of functions;
 - sequence and series of functions;
 - elements of ordinary differential equations.
-
- Vector spaces, subspaces, basis, dimension, direct sum;
 - matrices, systems of linear equations, determinants;
 - diagonalization, triangular forms;
 - linear transformations and their representation as matrices;
 - groups, subgroups, quotient groups, homomorphisms, products,
 - Lagrange's theorem, Sylow's theorems;
 - rings, ideals, maximal ideals, prime ideals, quotient rings,
 - integral domains, Chinese remainder theorem, polynomial rings, fields.
-
- Elementary discrete probability theory: Combinatorial probability, Conditional probability, Bayes' Theorem. Binomial and Poisson distributions