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