

MM-05
OPTION (I). DIFFERENTIAL EQUATIONS

M.M. 100

(Questions will be set from each unit/section)

Units	Topics
I	Homogenous Linear Equation with Variable coefficient Simultaneous differential equation, Total differential Equation.
II	Picard's Method of Integration, successive Approximation, Existence Theorem, Uniqueness Theorem. Existence & Uniqueness theorem (All Proof by Picard's method).
III	Dependence on initial conditions and parameters; Preliminaries. Continuity. Differentiability. Higher Order Differentiability. Poincare-Bendixson Theory-Autonomous systems. Umlanfsatz. Index of a stationary point. Poincare-Bendixson theorem. Stability of periodic solutions, rotation point, foci, nodes and saddle points.
IV	Linear second order equations-Preliminaries, Basic facts. Theorems of Sturm. Sturm-Liouville Boundary Value Problems. Numbers of zeros. Nonoscillatory equations and principal solutions. Nonoscillation theorems.
V	Partial differential Equation of first & Second order. Linear partial differential Equation with constant coefficient.