

Applied Maths – I (AS – 1001)

Course Code	AS-1001	Credits-4	L-3, T-1, P -0
Name of the Course	Applied Maths - I		
Lectures to be Delivered	52 (1 Hr Each) (L= 39, T = 13 for each semester)		
Semester End Examination	Max. Marks: 100	Min. Pass Marks: 40	Maximum Time: 3hrs
Continuous Assessment (based on sessional tests (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max. Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D, and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 40% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 15% of the total marks of the semester end examination for the course.

2. **For Candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section A

Function of several variables, limits and continuity, partial derivatives, higher order partial derivatives, Euler's theorem, Jacobians, maxima and minima of functions of two variables. Lagrange's method of multipliers, double and triple integrals, change of variables, applications of double and triple integrals, beta and gamma functions

Section B

Reduction formulae, definite integral as limit of a sum, area under a curve, length of an arc of a curve. Linear differential equations of second order with constant coefficients: complementary functions, particular integrals, Euler homogeneous form, and variation of parameters. Convergence of series, Taylor's theorem with remainder, power series expansion of functions, Taylor's and Maclaurin's series.

Section C

Matrices: review of properties of determinants. Elementary operations on matrices. Homogeneous and nonhomogeneous system of linear equations and their properties, bilinear, quadratic, hermitian and skew – hermitian forms. Eigenvalues of hermitian, skew- hermitian and unitary matrices.

Section D

Complex analytic functions: brief review of complex numbers, complex variable, concept of limit, continuity and derivatives of analytical function, cauchy- riemann equations, harmonic functions, complex series, some elementary functions, logarithm

Books:

1. Kryszig, Thomas- Finny, Advanced Engineering Mathematics.
2. S.S. Sastri, "Engineering Mathematics, (2nd edition) Vol-I and Vol-II.
3. B.S. Grewal, Higher Engineering Mathematics.
4. Piskunov, Differential and Integral Calculus.
5. R.K. Jain and S.R.K. Iyengar, Advanced Engineering. Mathematics.
6. Michael D. Greenberg, Advanced Engg. Mathematics.