MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WB

Syllabus for Bachelor of Computer Application (BCA) Programme

(Effective for Students Admitted in Academic Session 2018-2019)

Paper: Basic Mathematical Computation Code : BMN-101 Contacts Hours / Week : 4L+1CE Credits : 3

1. Module I: Linear Algebra (12L)

Determinant and its properties (up to third order), Minor and cofactors, Matrices, addition, multiplication and transpose of a matrix, Symmetric and skew-symmetric matrices and their properties, Adjoint, Inverse matrix, Solution of linear equations in three variables by Cramer's rule and matrix inversion method, Permutation and Combinations, Binomial theorem.

2. Module II: Two Dimensional Geometry (8L)

 ${\tt Locus}, {\tt Straight lines}, {\tt Circle}, {\tt Conic section}. {\tt Transformation of axes}, {\tt Plane polar curves}$

3. Module III: Differential Calculus (12L

Limits of function and continuity, fundamental properties of continuous functions (without proof), Derivatives, Geometric meaning of derivative, successive differentiation, Rolle's theorem, Mean value theorems, Taylor's and Maclaurin's theorem, Taylor's series, Functions of several variables, Limit and Continuity, Partial derivatives, Total differential, Euler's theorem on homogeneous functions of two variables. Tangents and normals

4. Module IV: Integral Calculus (8L)

Indefinite integrals, Definite integrals and their elementary properties, Definite integral as the limit of sum, Idea of improper integrals. Area under a plane curve

Suggested Readings:

- 1. Higher Algebra, S. K. Mapa, Levant Books.
- 2. Advanced Higher Algebra, Chakravorty and Ghosh, U N Dhar Pvt. Ltd.
- 3. Co-ordinate Geometry, S. L. Loney
- 4. Integral Calculus, Das and Mukherjee, U N Dhar Pvt. Ltd.
- 5. Differential Calculus, Das and Mukherjee, U N Dhar Pvt. Ltd.
- 6. Advanced Engineering Mathematics, E Kreyszig, Wiley