SYLLABUS

B.A./B.Sc.

SEMESTER-I

PAPER-III

TRIGONOMETRY AND MATRICES

Time : 3 Hours   Max. Marks : 30

Note :

1. The syllabus has been split into two units : Unit-I and Unit-II. Four questions will be set from each Unit.

2. The student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.

UNIT - I

D'Moivre's theorem, application of D'Moivre's theorem including primitive n^{th} root of unity. Expansions of $\sin n\theta$, $\cos n\theta$, $\sin^n \theta$, $\cos^n \theta$ ($n \,\varepsilon\, N$). The exponential, logarithmic, direct and inverse circular and hyperbolic functions of a complex variable. Summation of series including Gregory Series.

UNIT - II

Hermitian and Skew-Hermitian matrices, linear dependence of row and column vectors, row rank, column rank and rank of a matrix and their equivalence. Theorems on consistency of a system of linear equations (both homogeneous and non-homogeneous). Eigen-value, eigen-vector and characteristic equation of a matrix, Cayley-Hamilton theorem and its use in finding inverse of a matrix. Diagonalization.