B.A (Sem -I)

BA105 : ALGEBRA AND TRIGONOMETRY (MAJOR)

Pass percentage: 35%

External Evaluation: 70

Time allowed : 3hours.

Internal Evaluation: 30

Course objective : The objective of the course is to help the students acquire skills to do calculations like finding roots of a polynomial using different methods, solving simultaneous linear equation system and solving problems related to trigonometry with ease.

Course learning outcomes: On completion of course, the student will be able to

CO-I: Understand DeMoivre's theorem and apply it to solve numerical problems.

CO-II: Understand exponential, logarithmic ,hyperbolic functions of a complex variable,

CO-III: Understand how to find Eigen-values ,Eigen-vectors of a matrix and characteristic equation of a matrix and Diagonalization of matrices.

CO-IV : Understand rank of the matrix and use it to recognize consistent and inconsistent system of linear equations using row echelon form of the matrices.

INSTRUCTIONS FOR THE PAPER-SETTER/EXAMINER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 12 marks and Section C will be of 22 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Sections A and B and compulsory question of Section C.

SECTION:A

D'Moivre's theorem and its application including primitive nth root of unity, Expansions of $\sin n\theta$, $\cos n\theta$, $\sin^n\theta$,$\cos^n\theta$ ($n \in N$). The exponential, logarithmic, circular and hyperbolic functions. Relation between the roots and coefficients of a general polynomial in

One variable ,Transformation of equation, solutions of cubic equations using cardon's method, solutions of bi -quadratic equation using Descarte's method.

SECTION:B

Hermitian and skew- Hermitian matrices, Elementary operations on matrices, linear independence and dependence of row and column vectors, row rank, column rank and rank of a matrix and their equivalence, Normal form of a matrix, Theorems on consistency of a system of linear equations (both homogeneous and non homogeneous). Eigen-values, Eigen-vectors and characteristic equation of a matrix, Cayley-Hamilton theorem and its use in finding inverse of a matrix, Diagonalization.

Books Recommended:

1. K.B. Datta :Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.

2. S.R .Knight and H.S. Hall : HigherAlgebra,H.M.Publications,1994.

3. R.S.Verma and K.S.Shukla: TextBook onTrigonometry ,Pothishala Pvt. Ltd., Allahabad.

4. Shanti Narayan and P.K .Mittal: A TextBook of Matrices, S. Chand &Co., NewDelhi, Revised Edition, 2007.

5. C.Prasad, Textbook on Algebra and theory of equations, Pothishala Pvt. Ltd., Allahabad.