Appendix ‘A’
(Outlines of Tests)
Calculus ½ and Algebra ½ : 100 Marks

Appendix ‘B’
(Syllabi and Courses of Reading)
Note: Attempt five questions by selecting at least two questions from each Section.

Section-I: (4/8)
Calculus
- Real numbers and the real line
- Inequalities
- Limit of a function, left hand and right hand limits, Theorems of limits
- Continuity, Continuous functions
- Differentiable functions
- Differentiation of polynomial, rational and transcendental functions
- L’Hospitals Rule
- Taylor’s and Maclaurin’s series
- Techniques of evaluating indefinite integrals
- Integration by substitutions, Integration by parts
- Change of variable in indefinite integrals

Section-II: (4/8)
Algebra
- Definition of matrix, various types of matrices
- Algebra of matrices
- Determinant of square matrix, cofactors and minors
- Laplace expansion of determinants
- Elementary matrices, Adjoint and inverses of matrices
- Rank of a matrix
- Introduction to systems of linear equations
- Cramer’s rule, Gaussian elimination and Gauss Jordan method
- Real vector spaces, subspaces
- Linear combination and spanning set
• Linear independence and linear dependence
• Basis and dimension

**Recommended Books:**