SRI A.S.N.M. Govt. College, Palakol

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI: PAPER – VIII-B-2
ELECTIVE – VIII-B-2: SPECIAL FUNCTIONS

UNIT-I (HERMITE POLYNOMIAL)

Hermite Differential Equations, Solution of Hermite Equation, Hermite's Polynomials, Generating function, Other forms for Hermite Polynomial, To find first few Hermite Polynomials, Orthogonal properties of Hermite Polynomials, Recurrence formulae for Hermite Polynomials. CHAPTER: 6.1 to 6.8

UNIT-II (LAGUERRE POLYNOMIALS-I)

Laguerre's Differential equation, Solution of Laguerre's equation, Laguerre Polynomials, Generating function, Other forms for the Laguerre Poynomials, To find first few Laguerre Polynomials,Orthogonal property of the Laguerre Polynomials, Recurrence formula for Laguerre Polynomials, Associated Laguerre Equation. CHAPTER: 7.1 to 7.9

UNIT-III (LEGENDRE'S EQUATION)

Definition, Solution of Legendre's Equation, Definition of $P_n(x)$ and $Q_n(x)$, General solution of Legendre's Equation(derivationis not required)To show that $P_n(x)$ is the coefficient of h^n in the expansion of $(1-2xh+h^2)^{-\frac{1}{2}}$, Orthogonal properties of Legendre's Equation, Recurrence formula, Rodrigues formula, CHAPTER: 2.1 to 2.8,2.12,

UNIT-IV (BESSEL'S EQUATION)

Definition, Solution of Bessel's General Differential Equations, General solution of Bessel's Equation, Integration of Bessel's equation in series for n=0,Definition of $J_n(x)$, Recurrence formulae for $J_n(x)$,Generating function for $J_n(x)$. CHAPTER: 5.1 to 5.7

UNIT-V (Beta and Gamma functions)

Euler's Integrals-Beta and Gamma Functions, Elementary properties of Gamma Functions, Transformation of Gamma Functions,Another form of Beta Function, Relation between Beta and Gamma Functions,Other Transformations. CHAPTER: 2.9to 2.15

Prescribed text book: Special Functions by J.N.Sharma and Dr.R.K.Gupta.

G. Chandrasekhar 31/8/18

K. Sivaram

31/08/18