ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) , VISAKHAPATNAM

VI SEMESTER   MATHEMATICS   **TIME: 5 Hrs/Week**

M 6301 (4)   **Max. Marks : 100**

w.e.f 2017-2018   **ELECTIVE -VII(A) - 1 : LAPLACE TRANSFORMS**

SYLLABUS

OBJECTIVES: To enable the students to –

- Learn the definitions and methods.
- Understand the problems, theorems & identities.
- Apply the principles in Engineering, Physics and other Allied Sciences.

UNIT – 1 Laplace Transform I : -

Definition of - Integral Transform – Laplace Transform Linearity, Property, Piecewise continuous Functions, Existence of Laplace Transform, Functions of Exponential order, and of Class A.

UNIT – 2 Laplace Transform II : -

First Shifting Theorem, Second Shifting Theorem, Change of Scale Property, Laplace Transform of the derivative of f(t), Initial Value theorem and Final Value theorem.

UNIT – 3 Laplace Transform III : -

Laplace Transform of Integrals – Multiplication by t, Multiplication by t^n – Division by t. Laplace transform of Bessel Function, Laplace Transform of Error Function, Laplace Transform of Sine and cosine integrals.

UNIT –4 Inverse Laplace Transform I : -

Definition of Inverse Laplace Transform. Linearity, Property, First Shifting Theorem, Second Shifting Theorem, Change of Scale property, use of partial fractions, Examples.

UNIT –5 Inverse Laplace Transform II : -

Inverse Laplace transforms of Derivatives–Inverse Laplace Transforms of Integrals – Multiplication by Powers of 'P'– Division by powers of 'P'– Convolution Definition – Convolution Theorem – proof and Applications – Heaviside's Expansion theorem and its Applications.

Prescribed Text Book : Laplace Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut (2012)

Reference Books :-

1. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Co., Pvt. Ltd., New Delhi.(2012)
2. Laplace and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.(2016)
3. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by S. Chand and Co., Pvt.Ltd., New Delhi.(2016)