

With effect from: 2023-24 (R-21)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

Accredited by NAAC with A++ Grade
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS

Integral Transforms (Open Elective)

For B.E., V - Semester – CBCS

(For CSE, AIML & IT only)

oE

U2185510MA

Instruction : 3	Semester End Exam Marks : 60	Subject Reference Code : U2185510MA
Credits : 3	Sessional Marks : 40	Duration of Semester End Exam : 3 Hrs.
COURSE OBJECTIVES		COURSE OUTCOMES
<i>The course will enable the students to:</i>		<i>At the end of the course students will be able to:</i>
1. Understand the Definition of Laplace and its Properties.		1. Evaluate Laplace transforms of functions
2. Understand the Definition of inverse Laplace Transforms- Properties		2. Evaluate Inverse Laplace transforms of functions
3. Understand the applications of Laplace Transforms.		3. Apply Laplace transforms to evaluate integrals and to solve ordinary differential equations arising in engineering problems.
4. Study the Definition of Z- Transforms and its properties		4. Evaluate Z- transforms of Sequences
5. Understand the applications of Z- Transforms		5. Apply Z-transforms to solve ordinary difference equations arising in engineering problems.

UNIT-I (10 Hours)

Laplace Transforms

Introduction to Laplace transforms - Sufficient Condition for Existence of Laplace Transform - Properties of Laplace Transform - First shifting theorem - Second shifting theorem - Change of scale property - Differentiation of Laplace transform - Integration of Laplace Transform - Laplace Transform of Derivatives - Laplace Transform of Integrals

UNIT-II (10 Hours)

Inverse Laplace Transforms

Introduction to Inverse Laplace transforms - Properties of Inverse Laplace Transform - First shifting theorem - Second shifting theorem - Change of scale property - Multiplication with s^n - Division by s - Convolution Theorem (without proof).

UNIT –III (10 Hours)

Applications of Laplace Transforms

Application of Laplace transforms to solve Initial Value Problems with constant coefficients and with variable coefficients. Laplace transform of periodic functions – Triangular wave – Square wave – Saw tooth wave.

UNIT –IV (10 Hours)

Z-Transforms

Introduction - Z-transforms of Standard sequences - Linearity Property – Scaling Property - Shifting Properties - Initial value theorem - Final value theorem – Differentiation of Z-transform.

UNIT-V (8 Hours)

Inverse Z-Transforms

Introduction - Inverse Z-transforms of Standard functions - Convolution Theorem – Application of Z-Transforms to solve Difference Equations.

Text Books:

1. R.K. Jain & S.R.K. Iyengar, Advanced Engineering Mathematics, Third Edition, Narosa Publications, 2007.
2. Higher Engineering Mathematics, Dr.B.S Grewal 40th Edition, Khanna Publishers.

Reference Books:

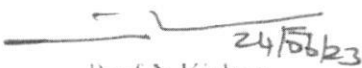
1. Advanced Engineering Mathematics, Kreyszig E. 8 th Edition, John Wiley & Sons Ltd, 2006.
2. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.


Online Resources :

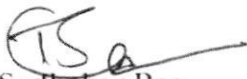
1. <http://mathworld.wolfram.com/topics>
2. <http://www.nptel.ac.in/course.php>


The break-up of CIE : Internal Tests + Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Tests	: 30
2. No. of Assignments	: 3	Max. Marks for each Assignment	: 5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	: 5
Duration of Internal Tests	: 90 Minutes		


Prof. N. Kishan
(OU Nominee)


Prof. M.A. Srinivas
(Subject Expert-JNTU-H)


Dr. T. Sudhakar Rao
(Chairman, BOS)


(Dr. C. H. R. Math)