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## MATHEMATICS – I

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**Paper Code** CEN-305

**Course Credits** 4

**Lectures / week** 3

**Tutorial / week** 1

**Course Description** UNIT – I

### COMPLEX VARIABLE

Complex number, Arc and diagram, complex functions, limit, continuity and differentiability Cauchy-Reimann equations, harmonic functions, construction of analytic functions, by mile-thomson method, conformal mapping, transformations  $W=Z$ ,  $1/z$ ,  $e$ ,  $(az+b)/cz=d$ .

### UNIT- II

#### FOURIER SERIES

Periodic functions, Fourier series of functions with period  $2\pi$  change of interval, Half range sine and cosine series.

### UNIT- III

#### LAPLACE TRANSFORM

Laplace transform, existence theorem, first shift theorem, multiplication and division by  $T$ , Laplace transform of deviated inverse Laplace transform, Application to solve Linear differential equations. Unit step function, Dirac delta function-their Laplace transforms, second shifting theorem. Laplace transform of periodic function, Applications.

### UNIT- IV

#### SERIES SOLUTION OF DIFFERENTIAL EQUATION

Series solution, Frobenius method, Legendre and Bessels equations.

### UNIT – V

Linear and non-linear partial differential equation of first order, four standard forms.

**References / Text Books:**

1. Kreyszig E. "Advanced Engineering Mathematics".
2. Prasad C, "Advanced Engineering Mathematics".

3. Pati T. "Functions of Complex Variables".

**Computer Usage /  
Software Requires:**

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