

**S.E. ELECTRONICS - SEMESTER –III**  
**ENGINEERING MATHEMATICS**

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| <b>Lectures: 4 hours / week</b>  | <b>Theory Paper: 3 hours and 100 marks</b> |
| <b>Tutorials: 1 hours / week</b> | <b>Termwork: 25marks</b>                   |

| <b>Detailed Syllabus</b> |  | <b>Lectures/Week</b>   |
|--------------------------|--|------------------------|
| 1                        | Laplace Transform<br>1.1 Existence of Laplace Transform, Properties of L.T, 1 <sup>st</sup> and 2 <sup>nd</sup> shifting theorem, Change of scale Properties, Unit step function, Heavi side, Dirac delta and Periodic function and their L.T<br>1.2 Inverse L. T. with partial fraction and Convolution theorem<br>1.3 Applications to solve initial and boundary value problems involving O.D.E. | 06<br><br>05<br><br>02 |
| 2                        | Fourier series<br>Dirichlet's conditions, Fourier series of periodic function with period $2\pi$ and $2l$ .F.S for even and odd functions. Half range sine and cosine and Parseval's identity.   | 07                     |
| 3                        | 3.1 Complex form of Fourier series<br>3.2. Forier integral and Fourier Transform with properties in detail   | 02<br>03               |
| 4                        | Matrices<br>4.1 Types of matrices, Adjoint, inverse and rank of a matrix. Normal form of a matrix<br>4.2. System of Homogeneous and non homogeneous equations and their consistency.   | 06                     |
| 5                        | Complex variables<br>5.1. Analytic function-R equation in Cartesian and polar form. Analytic function by Milne-Thompson method, Harmonic function.<br>5.2. Conformal mapping, Bilinear mapping and standard transforms.  | 06<br><br>04           |

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| 6 | Z- transform & vector analysis  |    |
|   | 6.1 Properties, change of scale, shifting, inverse of z transform.  | 04 |
|   | 6.2 Initial value and final value.  | 03 |
|   | 6.3 Vector integration, scalar potential work down Greens theorem, Divergence theorem, strokes theorem (without proof). | 08 |

**Theory Examination:**

1. Question paper will comprise of total 7 questions, each of 20 marks.
2. Only 5 questions need to be solved.
3. Question 1 will be compulsory and based on entire syllabus.
4. Remaining questions will be mixed in nature( for example Q2 a) from 2.1 then b) will be from 4.1 or 5.1 other than 2.1.
5. In question paper weightage of each chapter will be proportional to number of respective lecture hours mentioned in the syllabus.

**Recommended Books:**

1. P.N.Wartikar/J.N Wartikar, Text book Applied Mathematics, Vol.I & II, Pune Vidyarthi Griha Prakashan
2. Matrices by Shantinakaran
3. Vector Analysis by Murray R. Stiegel, Shaum series
4. Higher Engg. Mathematics. Dr. B.S. Grewal, Khanna Publication
5. Higher Engg. Mathematics by B.V. Ramana Tata Mcgraw-Hill Publishing company Limited.
6. Advanced Engg. Mathematics by C.Ray wylie & Louis, C. Barrott Tata Mcgraw-Hill Publishing company Limited
7. Advanced Engg. Mathematics 8<sup>th</sup> Ed Erwin kreysizg. John Wiley & Sons, Inc.

