**17SH2201-ENGINEERING MATHEMATICS -III**

**UNIT-I**

**APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**: Methods of Separation of Variables - One-dimensional Wave equation - One-dimensional Heat flow equation - Two-dimensional Laplace equations.

**UNIT-II**

**SPECIAL FUNCTIONS**: Bessel functions – Properties - Recurrence formulae for Bessel function - Generating function for Jn(x) - Orthogonality of Bessel Functions. Legendre functions - Rodrigue’s formula - Recurrence relation for Pn(x) - Generating function for Pn(x) - Orthogonality of Legender polynomials.

**UNIT-III**

**COMPLEX ANALYSIS-I**: Analytical functions, Cauchy - Riemann equations, Construction of Analytic function - Applications to flow problems - Harmonic and Conjugate harmonic functions - Bilinear transformations.

**UNIT-IV**

**COMPLEX ANALYSIS-II**: Complex integration - Line integral –Cauchy’s theorem - Cauchy’s integral formula - Generalized Cauchy’s integral formula.

**UNIT-V**

**RESIDUES**: Taylor’s theorem and Laurent’s theorem (without proof) – Singularities – Poles - Residues - Residue theorem - Evaluation of real definite integrals.

**UNIT-VI**

**PROBABILITY AND STATISTICS**: Introduction - Random experiments - Random variables - Discrete and Continuous distributions - Binomial distribution - Poisson distribution - Normal distribution.

**TEXTBOOKS:**

1. Higher Engineering Mathematics - B.S. Grewal, Kanna Publishers, New Delhi.
2. Engineering Mathematics - B.V. Ramana, Tata McGraw-Hill Education Pvt. Ltd, New Delhi.
3. Advanced Engineering Mathematics - Erwin Kreyszig, Wiley, India

**REFERENCE:**

1. Higher Engineering Mathematics - H.K. Dass, Er. Rajnish Verma, S. Chand Publication, New Delhi.
2. Engineering Mathematics -III - Dr.T.K.V. Iyengar, Dr.B. Krishna Gandhi, S. Ranganatham, Dr.M.V.S.S.N. Prasad, S. Chand Publication, New Delhi

3. Special functions and complex variables (Engineering Mathematics-III) –

Shahnaz Bathul, PHI, New Delhi.