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| **BTMA2T02 NUMERICAL METHODS & INTEGRAL TRANSFORMS** |

**UNIT – I: Solution of Algebraic and Transcendental Equations**

Introduction- Bisection Method – Method of False Position – Iteration Method – NewtonRaphson Method.

**UNIT – II: Interpolation**

Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols, Differences of a polynomial-Newton’s formulae for interpolation – Interpolation with unevenly spaced points – Lagrange’s Interpolation formula

**UNIT – III: Numerical solution of Ordinary Differential equations**

Solution by Taylor’s series-Picard’s Method of successive Approximations - Euler’s Method– Runge-Kutta Methods

**UNIT – IV: Fourier Series**

Introduction- Determination of Fourier coefficients – even and odd functions –change of interval– Half-range sine and cosine series

**UNIT – V: Fourier Transforms**

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms

**UNIT –V I: Z-transform**

Introduction– properties – Damping rule – Shifting rule – Initial and final value theorems -Inverse z transform- -Convolution theorem.

Applications: Solution of difference equation by Z-transforms.

**Books:**

1. **B.S. GREWAL**, Higher Engineering Mathematics, 42nd Edition, Khanna Publishers
2. **B.V. RAMANA**, Higher Engineering Mathematics, Tata McGraw Hill
3. **V. RAVINDRANADH, P. VIJAYA LAXMI,** A Text Book on Mathematical Methods by Himalaya Publishing House.

**Reference Books**

1. **ERWIN KREYSZIG**, Advanced Engineering Mathematics, 9th Edition, Wiley-India
2. **S. S. Sastri (PHI),** Introductory Methods of Numerical Analysis.