NC SYLLABUS

1. Interpolation
    a. Equally Spaced
        i. Newton forward / Backward
        ii. Center Difference (Formulas will Be Given)
            1. Gauss Forward / Backward
            2. Sterling
            3. Bessel
            4. Laplace Evertee
    b. Unequal Spaced
        i. Newton Divided Difference
        ii. Lagrange Interpolation (inverse also)
2. Numerical Differentiation (of all Above Formulae)
3. Numerical Integration
    a. Trapezoidal (Also Called Composite Trapezoidal)
    b. Simpson 1/3 Rule (Also Called Composite Simpson)
    c. Simpson 3/8 Rule (Also Called Composite Simpson) (Depends if instructor ne karwaya)
    d. Weddle Rule (Also Called Composite Simpson) (Depends if instructor ne karwaya)
4. Error Bounds
    a. Trapezoidal
    b. Simpson
5. Romberg's Integration (Must In final)
    a. For Simpson
    b. For Trapzoidal
6. Bisection Method (Also the formula for its no of iterations)
7. Successive Approximation / Fixed Point Iteration
8. Regula - Falsi / False Position Method
9. Secant / Chord Method
10. Newton - Raphson Method
11. Rate Of Convergence Of (6 - 10) (90% Chance in Final)
12. Gauss – Jacobi

13. Gauss – Seidal
14. LU – Decomposition Methods
    a. Method of Factorization / Triangularization / Dollitle' s Method
    b. Crout's Method
    c. Symmetric / Cholesky's Method
15. Gauss Elimination
    a. Partial Pivoting
    b. Total Pivoting
16. Numerical Solution of ODE
    a. Taylor Series
        i. 1st Order
        ii. 2nd Order
        iii. System of Des
    b. Picard's Method
    c. Multi – Step Methods
        i. Euler's Method
        ii. Modified Euler's Method
        iii. Improved Modified Euler's Method
    d. RK Method (1 to 4) (Confirm 20 marks Question in Final)
        i. System of ODE
        ii. Second Order
    e. Milne's Predictor & Corrector Method
17. Boundary Value Problems
    a. Finite Difference Scheme (Must in final)

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