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| <b>UG</b>   | Department: <b>Chemical Engineering</b>                           |
| Course Code: <b>CHP215</b>  | Course Name: <b>Numerical Methods in Chemical Engineering Lab</b> |
| Credit: <b>2</b>  | L-T-P: <b>0-0-3</b>   |
| Version: <b>1</b>   | Approved on:  |
| Prerequisite Course: <b>Nil</b>   |   |
| <p>Write program in C for any 10 of the following numerical methods:</p> <ol style="list-style-type: none"> <li>1. Determinant and inverse of a matrix</li> <li>2. Gauss Elimination Method</li> <li>3. Gauss Jordan Method</li> <li>4. LU Decomposition Method</li> <li>5. Thomas Algorithm</li> <li>6. Newton-Raphson Method (Single and multivariable function)</li> <li>7. Least Square Method</li> <li>8. Lagrangian Interpolation</li> <li>9. Numerical Differentiation using (a) Newton Forward Difference Method (b) Newton Backward Difference Method (c) Newton Central Difference Method</li> <li>10. Numerical Integration using Simpson's formula and Trapezoidal formula</li> <li>11. Explicit Euler method and Crank Nicholson method for solving ODE-IVPs</li> <li>12. Runge- Kutta 4th Order Method (Single and Simultaneous differential Equations)</li> <li>13. Finite Difference method to solve ODE-BVPs</li> <li>14. Orthogonal Collocation method to solve ODE-BVPs</li> </ol> |   |