

**MA8491 NUMERICAL METHODS****Important 2 Mark Questions****Part-A**

1. Compare Gauss elimination and Gauss Jordan methods
2. Solve the following system of equations using Gauss-Jordan elimination method  $2x + y = 3, x - 2y = -1$
3. Write the formula for Newton Raphson method?
4. State the principle used in Gauss – Jordan method.
5. Define cubic spline function.
6. State any two properties of divided differences
7. Use Lagrange formula, find the polynomial to the given data

$x$	0	1	3
$y$	5	6	50

8. Find the divided difference of  $f(x) = x^3 + x + 2$  for the arguments 1, 3, 6, 11
9. State Newton's forward interpolation formula.
10. What is the order of error in Simpson's one-third rules?
11. State Simpson's one-third rule.
12. Write down two-point Gaussian quadrature formula.
13. Use two-point Gaussian quadrature formula to solve  $\int_{-1}^1 \frac{dx}{1+x^2}$
14. Using Euler's method find  $y(0,2)$  and  $y(0,4)$  from  $y' = x + y, y(0) = 1$ .
15. Give the error for Milne's predictor method.
16. State Euler formula.
17. Using Taylor series method find  $y(1.1)$  given that  $y' = x + y, y(1) = 0$ .
18. State fourth order Runge – Kutta algorithm.
19. Write the difference scheme for solving the Poisson equation  $\nabla^2 u = 0$ .
20. Write down the Crank – Nicholson's formula to solve parabolic equation.
21. Using finite difference solve  $\frac{d^2y}{dx^2} - y = 0$  where  $y(0) = 0$  and  $y(1) = 1, h = \frac{1}{2}$
22. Classify the partial differential equation  $u_{xx} + 4u_{xy} + 4u_{yy} - u_x + 2u_y = 0$
23. Write the finite difference formula for  $y'(x)$  and  $y''(x)$
24. State diagonal five-point formula for solving Laplace equation.

SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA

*Notes*

*Syllabus*

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25. Write down the explicit finite difference method for solving one dimensional wave equation.
26. State the finite difference scheme to solve the equation  $y_{tt} = \alpha^2 y_{xx}$
27. State the Bender – Schmidt's formula for solving one dimensional heat equation.