

SECTION B — (5 × 6 = 30 marks)

21. (a) Explain pivoting and partial pivoting with example.

Or

(b) Discuss the iterative method to solve the system of simultaneous linear equations.

22. (a) Using cubic Spline fitting compute  $Y(1.5)$  from the following table :

X:	1	2	3
Y:	-8	-1	18

Or

(b) Solve the following system using Jacobi method :

$$\begin{aligned}10x + 2y + z &= 9 \\2x + 20y - 2z &= -44 \\-2x + 3y + 10z &= 22.\end{aligned}$$

23. (a) Solve by Euler's method.

$$\frac{dy}{dx} = x^2 + y, \quad y(0) = 1 \text{ determining } y(0.02).$$

Or

(b) Explain the Random walk and Metropolis method.

2 (a) Explain the structure of Arithmetic IF statement used in FORTRAN. Give example.

Or

(b) Discuss the functions of Interpreters and compilers.

25. (a) Outline the hierarchy of operations and uses of paranthesis in a Fortran arithmetic expressions.

Or

(b) Explain the I, F, X Format used in FORTRAN program. Give examples for each.

SECTION C — (5 × 10 = 50 marks)

26. (a) Solve by Gauss-elimination method :

$$\begin{aligned}3x + y + z &= 1 \\x + 3y - z &= 11 \\x - 2y + 4z &= 21.\end{aligned}$$

Or

(b) Find the inverse of the given matrix

$$\begin{bmatrix} 2 & 4 & 3 \\ 0 & 1 & 1 \\ 2 & 2 & -1 \end{bmatrix}.$$