

(2)

Unit-II

2. (a) Apply Gauss-Jordan method to solve the equation :

$$x + y + z = 9$$

$$2x - 3y + 4z = 13$$

$$3x + 4y + 5z = 40$$

- (b) Find largest eigenvalue of the matrix

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \text{ using power method.}$$

OR

- (a) Find the eigenvalue and eigenvector of

the matrix $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.

- (b) Find the inverse of $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix}$.

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Unit-III

3. Find $f(22)$ using Gauss forward formula :

x	:	20	25	30	35	40	45
$f(x)$:	354	332	291	260	231	204

OR

Construct Newton's forward interpolation polynomial for the following data :

x	:	4	6	8	10
y	:	1	3	8	16

Unit-IV

4. Find $y'(0)$ and $y''(0)$ from the following table :

x	:	0	1	2	3	4	5
y	:	4	8	15	7	6	2

OR

Evaluate $\int_0^1 \frac{dx}{1+x}$ by using —

- (a) Trapezoidal rule;
- (b) Simpson's 1/3rd rule;
- (c) Simpson's 3/8th rule.

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Unit-V

5. Find approximate value of y when $x = 0.1$ if

$\frac{dy}{dx} = x - y^2$ and $y = 1$ at $x = 0$ using Taylor series method.

OR

Apply Euler's method to solve $y' = x + y$ at $y(0) = 0$.
