

Practical 1, 2, &3

1. Draw a flowchart & write a program to calculate, $Z = A + (B \times C)$
Here A, B, C & Z are square matrices of max size (10 x10). 14
2. Draw a flowchart & write a program to generate transpose of given matrix. 7
3. Draw a flowchart & write a program to calculate & print [X], Where $[X] = [Y]+[Z]$ 14
But $[Y] = 2[A]$, & $[Z] = [A] \times [B]$, here [A] & [B] are given square matrixes of size (m x m).
4. Draw a flowchart & write a program to print [C], Where $[X] = [A]+[B]$ & $[C] = 2[X]^T$ 14
5. Draw a flowchart & write a program to calculate $[Z] = [X] \times [Y]$, Here X,Y& Z are 7
rectangular matrices.
6. Draw a flowchart & write a program to calculate $[X] = [A]+ ([B] \times [C]) + [A]^T$, Here 13
A,B & C are square matrices
7. Draw a flowchart & write a program to Demonstrate application of Fourth order Runge Kutta 7
method for solution of 1St Order ODE. (Assume your own Equations)
8. Draw a flowchart & write a program to Demonstrate application of Fourth order Runge Kutta 7
method for solution of 2nd Order ODE. (Assume your own Equations)
9. Write the two separate programs to demonstrate application of Runge Kutta method for 13
solution of..... (1) First order differential equation (2) Second order differential equation.
10. Draw a flowchart & write a program to Demonstrate solution of simultaneous ODEs using 7
Fourth order Runge Kutta method.

Practical 4,5, &6

1. Draw a flowchart & write a program to calculate roots of quadratic equation. 7
2. Draw a flowchart & write a program to Demonstrate application of Bisection Method for 6
locating root of an equation.
3. Draw a flowchart & write a program to Demonstrate application of Simpsons 1/3rd Rule for 7
calculating Area under Curve. Using, $y= 5.1X^3+2X+5$
4. Draw a flowchart & write a program to locate root equation $y= 3X^3 + 2.8X - 20$, using 6
Newton-Raphson Method.

5. Draw Flowchart & write a program, using trapezoidal Rule, to calculate Area under Curve $y=4x^2+2x-3$, within the limits $x=a$, $x=b$, dividing the range in 'n' equal length parts. 7
6. Draw a flowchart & WAP , using Block IF, to calculate roots of quadratic equation. 7
7. Write a program to calculate roots of quadratic equation $ax^2+bx+c=0$. If roots are imaginary, prints message accordingly. 6
8. Draw a flowchart & write a program to locate root equation, using Regula-Falsi Method. 6
9. Draw a flowchart & write a program, using Arithmetic IF, to calculate roots of quadratic equation. 7
10. Draw Flowchart & write a program, to calculate Area under Curve $y=4.75x^2-0.75x$, within the range $x=1.75$ to 4.75 , using trapezoidal Rule. 7

Practical 7 & 8

1. Write a program to demonstrate design of a rectangular RCC beam using Limit State Method. Explain the program logic with the help of comment statements placed at appropriate locations. 14
2. Write the program to calculate SF& BM ordinates at l/n interval and under the load for simply supported beam subjected to point load at a distance 'a' from left support. 8
3. Write a program to demonstrate calculations of RL using Height of instrument method. 6
4. Write the program to calculate Center Of Gravity, Moment Of Inertia & Radius Of Gyration of a 'T' section. 7
5. Write a program to demonstrate calculation of coefficient of permeability in parallel & perpendicular direction of bedding plane. 7
6. Write a program to demonstrate calculation of Chezy's constant. 7
7. Draw flowchart & write the program to calculate SF& BM ordinates at any given point for **Cantilever beam** subjected to uniformly distributed load. 9
8. Write the program to calculate Max SF& Max BM for case of simply supported beam subjected to udl over entire span. 4