



SNS College of Technology, Coimbatore-35.



(Autonomous)

16MA202 STATISTICS AND NUMERICAL METHODS

PART-C

1. A tea company appoints four salesman A, B, C and D and observes their sales in three seasons, summer, winter and monsoon. The figures are given in the following table.

Seasons	Salesman				Seasons total
	A	B	C	D	
Summer	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	112
Salesman's total	90	93	81	96	360

- i) Do the salesman significantly differ in performance?
ii) Is there significant difference between the seasons?
2. To study the performance of three detergents and three different water temperature the following 'whiteness' readings were obtained with designed equipment.

Water temp.	Detergent	Detergent	Detergent
	A	B	C
Cold water	57	55	67
Warm water	49	52	68
Hot water	54	46	58

Perform a two way analysis of variance, using 5% level of significance (Given $F_{5\%} = 6.94$)

3. Analysis the variance in the latin square of yields paddy where P, Q, R and S denote the difference methods of cultivation

S122 P121 R123 Q122

Q124 R123 P122 S125

P120 Q119 S120 R121

R122 S123 Q121 P122

Examine whether the different methods of cultivation have given significantly different yields.

4. Analyse the result of a Latin square experiments

	1	2	3	4
1	A(12)	D(20)	C(16)	B(10)
2	D(18)	A(14)	B(11)	C(14)
3	B(12)	C(15)	D(19)	A(13)
4	C(16)	B(11)	A(15)	D(20)

The letters A,B,C,D denote the treatments and the figures in brackets denotes the observations.

5. Find a root of $x \log_{10} x - 4.772393 = 0$ by Newton's method correct to 3 decimal places

6. Find a root of $x \log_{10} x - 1.2 = 0$ by Newton's method correct to 4 decimal places

7. Apply Gauss Elimination method to find the solution of the equations:

$$2x+3y-z=5, 4x+4y-3z=3, 2x-3y+2z=2$$

8. Using Gauss-Jordan method, Find the Inverse of the matrix

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

9. Using Gauss- Jordan method, Find the Inverse of the matrix $\begin{bmatrix} 2 & 2 & 3 \\ 2 & 1 & 1 \\ 1 & 3 & 5 \end{bmatrix}$

10. Solve the system of equations by Gauss Jordan method

$$x + 2y + z = 3, 2x + 3y + 3z = 10, 3x - y + 2z = 13$$

11. Solve the system of equations by Gauss Jacobi method

$$10x + y + z = 12, 2x + 10y + z = 13, 5x + y + z = 7$$

12. Solve the system of equations by using Gauss-Seidel method (correct upto 3 decimal places)

$$\begin{aligned}8x - 3y + 2z &= 20 \\4x + 11y - z &= 33 \\6x + 3y + 12z &= 35\end{aligned}$$

13. Solve the system of equations by Gauss-Seidel method

$$27x + 6y - z = 85, \quad x + y + 54z = 110, \quad 6x + 15y + 2z = 72$$

14. Determine by power method the largest Eigen value and the corresponding Eigen vector of

the matrix $\begin{bmatrix} 1 & 3 & -1 \\ 3 & 2 & 4 \\ -1 & 4 & 10 \end{bmatrix}$

15. Determine the largest eigenvalue and the corresponding eigenvector of the matrix

$$\begin{bmatrix} 2 & 2 & 3 \\ 2 & 1 & 1 \\ 1 & 3 & 5 \end{bmatrix}$$