



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution, Affiliated to Anna University)
Coimbatore – 641 035.



Internal Assessment Examination-II

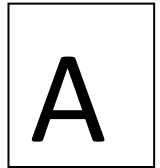
Academic Year 2022-2023(Even)

Fourth Semester

19MAT202 –STATISTICS AND NUMERICAL METHODS

(REGULATION 2019)

(Common to AGRI, AUTO, FT & MECH)



TIME: 1 1/2 HOURS

MAXIMUM MARKS: 50

ANSWER ALL QUESTIONS

PART A — (5 x 2 = 10 Marks)

		CO	BL	
1.	Write any two uses of ANOVA.	CO2	Und	2
2.	Why 2x2 Latin Square is not possible?	CO2	Rem	2
3.	Distinguish between direct and iterative methods.	CO3	Und	2
4.	Gauss-Seidel method is better than Gauss-Jacobi method .Justify	CO3	Und	2
5.	Write the types of Iterative methods.	CO3	Und	2

PART B — (13+13+14 = 40 Marks)

6.	(a)	<p>A Farmer wishes to test the effect of four different fertilizers A, B, C, D on the yield of wheat. In order to eliminate sources of error due to variability in soil fertility, he uses the fertilizers, in Latin square arrangement as indicated in the following table, where the numbers indicate the yield in bushels per unit area.</p> <table border="1"> <tbody> <tr> <td>A (18)</td> <td>C (21)</td> <td>D (25)</td> <td>B (11)</td> </tr> <tr> <td>D (22)</td> <td>B (12)</td> <td>A (15)</td> <td>C (19)</td> </tr> <tr> <td>B (15)</td> <td>A (20)</td> <td>C (23)</td> <td>D (24)</td> </tr> <tr> <td>C (22)</td> <td>D (21)</td> <td>B (10)</td> <td>A (17)</td> </tr> </tbody> </table> <p>Perform ANOVA to determine if there is a significant difference between the fertilizers at $\alpha=5\%$ LOS.</p>	A (18)	C (21)	D (25)	B (11)	D (22)	B (12)	A (15)	C (19)	B (15)	A (20)	C (23)	D (24)	C (22)	D (21)	B (10)	A (17)	CO2	App	13
A (18)	C (21)	D (25)	B (11)																		
D (22)	B (12)	A (15)	C (19)																		
B (15)	A (20)	C (23)	D (24)																		
C (22)	D (21)	B (10)	A (17)																		
(OR)																					
	(b)	(i)	Find the inverse of the matrix $\begin{pmatrix} 2 & 2 & 3 \\ 2 & 1 & 1 \\ 1 & 3 & 5 \end{pmatrix}$ using Gauss Jordan method.	CO3	App	7															
		(ii)	Solve using Gauss Elimination method: $28x + 4y - z = 32$; $x + 3y + 10 = 24$; $2x + 17y + 4z = 35$.	CO3	App	6															
7.	(a)	(i)	Solve the equation $f(x) = x^3 - 6x + 4$ using Newton Raphson method.	CO3	App	7															

	(ii)	Solve using Gauss Jordan method: $x + 3y + 3z = 16; x + 4y + 3z = 18; x + 3y + 4z = 19.$	CO3	App	6																				
(OR)																									
	(b)	Obtain Newton iterative formula for finding $1/N$, where N is a positive real number. Hence evaluate $1/26$. Correct to 4 decimal places.	CO3	App	13																				
8.	(a)	(i)	CO2	Ana	14																				
						Analyze the following results of a Latin Square experiments: <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>1</td> <td>A (12)</td> <td>D (20)</td> <td>C (16)</td> <td>B (10)</td> </tr> <tr> <td>2</td> <td>D (18)</td> <td>A (14)</td> <td>B (11)</td> <td>C (14)</td> </tr> <tr> <td>3</td> <td>B (12)</td> <td>C (15)</td> <td>D (19)</td> <td>A (13)</td> </tr> <tr> <td>4</td> <td>C (16)</td> <td>B (11)</td> <td>A (15)</td> <td>D (20)</td> </tr> </table> <p>The letters A,B,C,D denote the treatments and the figures in the brackets denote the observations.</p>		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)
	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)																					
(OR)																									
	(b)	Solve by Gauss Seidel and Gauss Jacobi method: $9x - y + 2z = 9; x + 10y - 2z = 15; 2x - 2y - 13z = -17$	CO3	Ana	14																				

Rem/Und: Remember/ Understand **App:** Apply **Ana:** Analyze **Eva:** Evaluate **Cre:** Create

Prepared by

Verified by

Dean(S&H)