Reg. No.: | | | | | | | |

SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Coimbatore – 641 035.

Internal Assessment -II

Academic Year 2022-2023(Even)

Fourth Semester

19MAT205 – PROBABILITY, STATISTICS &NUMERICAL METHODS

(REGULATION 2019)

(Common to MCT&CIVIL)

A

TIME: 1 1/2 HOURS **MAXIMUM MARKS: 50**

ANSWER ALL QUESTIONS

PART A — (5 x 2 = 10 Marks)

		CO	BLOOMS	
1.	Define Type I & Type II errors in testing of hypothesis.	CO2	Und	2
2.	State the Applications of Chi-square test.	CO2	Und	2
3.	Write the iterative formula of Newton-Raphson method.	CO3	Rem	2
4.	State the difference between Gauss Jordan and Gauss Seidal methods.	CO3	Und	2
5.	Find the inverse of the matrix $\begin{pmatrix} 5 & -2 \\ 3 & 4 \end{pmatrix}$ by using Gauss Jordan method.	CO3	Rem	2

PART B — (13+13+14 = 40 Marks)

6. (a) i) The weight of 10 peoples of a locality are found to be 70,67,62,68,61,68,70,64,64,66 kgs. Is it reasonable to believe that the average weights of people locality greater than 64kgs?. Test at 5% level of significance. CO2 App 6

ii) A die was thrown 498 times. Denoting X to be the number appearing on the top face of it, the observed frequency of x is given below. CO2 App 7

x	1	2	3	4	5	6
f(x)	69	78	85	82	86	98

What opinion you would form for the accuracy of the die?

(OR)

b) i) In a test examination given to two groups of students the marks obtained were as follows: CO2 App 6

Group I	18	20	36	50	49	36	34	49	41
Group II	29	28	26	35	30	44	46		

Examine whether the significance of difference between the average marks secured by the students of the above two groups.

ii) Test whether the population variances are identical at 1% level of significance. CO2 App 7

Sample I	10	11	16	12	10	11	12	16

Sample II	7	9	3	7	9	3	15	

7.	**(a) i)**	Find the real positive root of $3x-\cos x-1=0$ by using Newton-Raphson method.	CO3	App	6
	ii)	Using Gauss Jordan method, Solve the following system of equations: $x+3y+3z=16$ $x+4y+3z=18$ $x+3y+4z=19$	CO3	Ana	7
		(OR)			
	(b) i)	Solve the following system of equations using Gauss Seidal method $8x-3y+2z=20$ $4x+11y-z=33$ $6x+3y+12z=35$	CO3	App	6
	ii)	Using Gauss Jordan method, find the inverse of $\begin{pmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{pmatrix}$	CO3	Ana	7

8.	**(a) i)**	A sample of two types of electric bulbs were tested for length of life and the following data were obtained Examine whether the samples come from the same normal population at 5%level of significance.	CO2	App	14

Samples		Mean	Standard Deviation
I	8	1134	35
II	7	1024	40

		(OR)			
	b) i)	Find the iterative formula for finding the value of $\frac{1}{N}$,where N is a real number by using Newton Raphson method.Hence evaluate $\frac{1}{26}$ correct to 4 decimal places.	CO3	App	7
	ii)	Solve the following system of equations using Gauss Seidal method $20x+y-2z=17$ $3x+20y-z=-18$ $2x-3y+20z=25$	CO3	App	7

Rem/ Und:Remember/Understanding, App:Apply, Ana:Analyze, Eva:Evaluate , Cre:Create