Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

END TERM EXAMINATION - AUGUST 2024

Semester : II	**Date :21/08/24**
Course Code : MEC5001	**Time :9.30AM TO 12.30PM**
Course Name : Optimization Technique	**Max Marks :100**
Program : M.Tech.	**Weightage :50%**

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A			
	ANSWER ANY 5 QUESTIONS	**5Q X 2M=10M**	
1	What is precision?	(CO 1)	[Knowledge]
2	Write Taylors series till n^{th} order approximation.	(CO 2)	[Knowledge]
3	Differentiate between Accuracy and Precision.	(CO 2)	[Knowledge]
4	Write Taylors series till n^{th} order approximation.	(CO 1)	[Knowledge]
5	Define Mathematical model.	(CO 1)	[Knowledge]
6	Difference between Int and float value in the programming language.	(CO 2)	[Knowledge]
7	Explain the condition when N-R method fails or convergence is very slow.	(CO 1)	[Knowledge]

PART B			
	ANSWER ANY 5 QUESTIONS	**5Q X 10M=50M**	
8	What is Dynamic Programming. Classify dynamic problem based on different conditions.	(CO 1)	[Knowledge]
9	What are the characteristics of the dynamic programming.	(CO 1)	[Knowledge]
10	What is Queuing theory. Show component of queuing theory pictorially.	(CO 1)	[Knowledge]

11	Service facilities are arranged to serve the arriving customer or a customer in the waiting line is known as service mechanism. Show service facility design and service discipline graphically.	(CO 1)	[Knowledge]
12	Use Gauss Elimination Method to solve following linear equations $4x_1 - 8x_2 = -24$ $-x_1 + 6x_2 = 34$	(CO 1)	[Knowledge]
13	Explain Newton Raphson Method. Derive the N-R formula.	(CO 1)	[Knowledge]

PART C

ANSWER ANY 2 QUESTIONS **2Q X 20M=40M**

14	Fit a straight line to the X and Y values and also calculate the standard deviation.	(CO 1)	[Comprehension]

X	1	2	3	4	5	6	7
Y	0.5	2.5	2.0	4.0	3.5	6.0	5.5

15	Use LU decomposition method for solving the following linear equations $8x_1 + 4x_2 - x_3 = 11$ $-2x_1 + 5x_2 + x_3 = 4$ $2x_1 - x_2 + 6x_3 = 7$	(CO 2)	[Comprehension]
16	Fit a second order polynomial to the data given in below table. Calculate errors in the results.	(CO 2)	[Comprehension]

x_i	0	1	2	3	4	5
y_i	2.1	7.7	13.6	27.2	40.9	61.1