Form A: Paper –Setting Blank Ref No. –Ex/CE/5/T/203/2024

BACHELOR OF ENGINEERING (CIVIL ENGINERRING) SECOND YEAR FIRST SEMESTER 2024

SUBJECT: COMPUTER PROGRAMMING-II.

Full Marks 100

Time: Three hours (50 marks for each part)

Use a separate Answer-Script for each part

No. of Question	PART –I	Marks
1	Create a structure to specify data about employee. The data to be stored its name, Age, Basic pay and ID no. Assumed maximum 100 no employee. Write a C program to print the details of an employee, if give an ID no. as input.	10
2	Write short notes **any <u>two</u>** of the following. a) Use of pointer in C program b) Structure type Variable. c) Recursive function.	4x2=8
3	**Answer any two questions.** a) Write a C program to find out value of $\int_{\frac{\pi}{4}}^{\pi} x \sin x \, dx$ using Simson's rule. Given no. of division (k) as an input. b) Write a C program, to product of two Matrices [A] and [B], both of size (2x3) and (3X2) respectively and store the result in a separate matrix [C]. c) Write a C program, to find biggest value from diagonal element of nxn matrixes. d) Write a C program to the sum of following series for the first N terms, using function subprogram. $y = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} \ldots\ldots\ldots\ldots$ e) Write a C program to find the value of ${}^{n}c_{r}$, using function subprogram.	4X8=32

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BACHELOR OF ENGINEERING (CIVIL ENGINEERING) SECOND YEAR FIRST SEMESTER EXAM – 2024

SUBJECT : COMPUTER PROGRAMMING- II

Time: Three Hours

Full Marks 100
(50 marks for each part)

Use a separate Answer-Script for each part.

Answer any **Five** Questions.

No. of questions	Part II	Marks
1.	a) Derive composite Simpson's one third rule using first three terms of Newton- Gregory forward formula.	8
	b) What is the basic difference between Simpson's 1/3 rule and Trapezoidal rule?	2
2.	a) Using two-point Gauss quadrature rule, estimate the integral. $\int_0^1 \int_0^6 x^2 y^2 dx dy$ Also, find the absolute relative true error.	7
	b) Use the Trapezoidal rule with no. of segments (n)= 4, evaluate the integral. $\int_1^6 (x^3 + x)\, dx$	3
3.	a) Define Eigen value and Eigen vector.	2
	b) Using polynomial method, determine the Eigen values and corresponding Eigen vectors for the matrix. $A = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{bmatrix}$	8
4.	a) Explain briefly power and inverse power method in connection with the Eigen value problems.	3
	b) Obtain Eigen values and corresponding Eigen vectors for the system of equations, using numerical methods (power and inverse power method), with three iterations. $2x_1 - 12x_2 = 0$ $x_1 - 5x_2 = 0$	7

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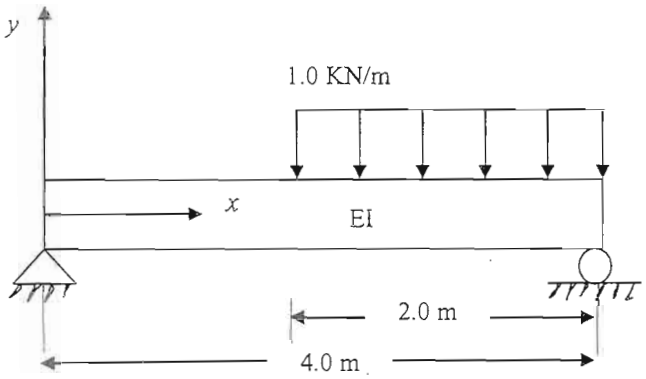
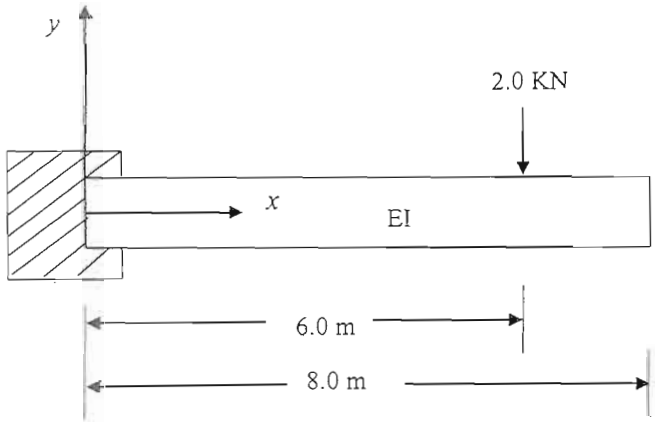
No. of questions	Part II	Marks
5.	a) Write an algorithm to compute the value of a definite integral using Gauss quadrature rule.	4
	b) Derive the finite difference equation for $f'(x)$ and $f''(x)$.	4
	c) What is a boundary-value problem?	2
6.	Compute the deflection at mid-point and quarter points of the beam shown in figure below using finite difference method. 	10
7.	Find the deflection for the cantilever beam at 2.0m,4.0m,6.0m and 8.0m from the fixed end using finite difference method. 	10