BACHELOR OF ENGINEERING (CIVIL ENGINEERING) SECOND YEAR FIRST SEMESTER SUPPLEMENTARY EXAM – 2023
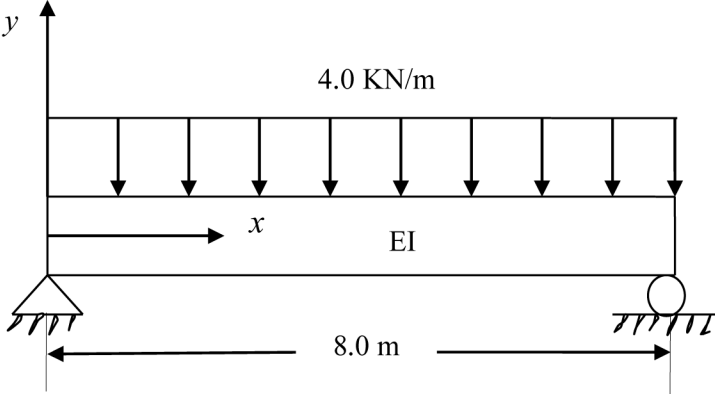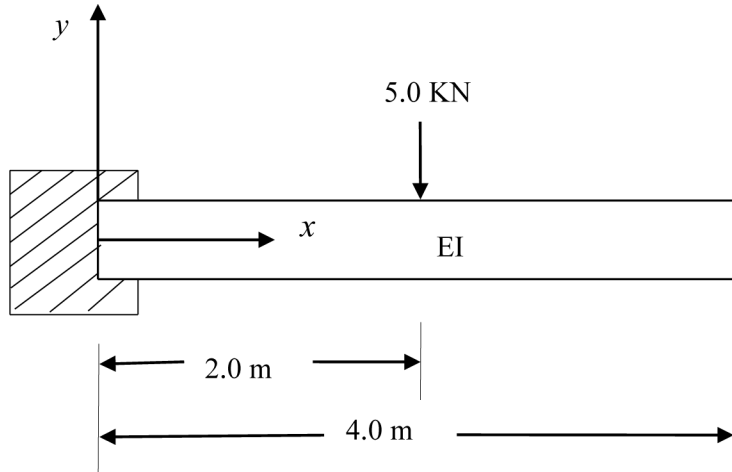
SUBJECT : COMPUTER PROGRAMMING- II

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 I	Marks
1.	a) Define Eigen value and Eigen vector.	2
	b) Using polynomial method, determine the Eigen values and corresponding Eigen vectors for the matrix. $$A = \begin{bmatrix} 1 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 1 \end{bmatrix}$$	8
2.	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. $$2x_1 + 4x_2 = 0$$ $$3x_1 + 13x_2 = 0$$	7
3.	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
4.	a) Using three-point Gauss quadrature rule, estimate the integral. $$\int_0^4 (2x^2 + x + 4)\,dx$$ Also, find the absolute relative true error.	7
	b) Use the Trapezoidal rule with no. of segments (n)= 4, evaluate the integral. $$\int_2^8 (x^2 + 2x)\,dx$$	3

[Turn over

No. of questions	Part I	Marks
5.	a) Write an algorithm to compute the value of a definite integral using Trapezoidal rule.	4
	b) Derive the finite difference equation for $f'(x)$ and $f''(x)$.	4
	c) What is a boundary-value problem ? How is it different from an initial-value problem?	2
6.	Compute the deflection at mid-point and quarter points of the beam shown in figure below using finite difference method. *y* 4.0 KN/m *x* EI 8.0 m	10
7.	Find the deflection for the cantilever beam at 1.0m,2.0m,3.0m and 4.0m from the fixed end using finite difference method. *y* 5.0 KN *x* EI 2.0 m 4.0 m	10

Form A: Paper-Setting Blank

Ref No.-Ex/CE/5/T/203/2023(S)

BACHELOR OF ENGINEERING (CIVIL ENGINEERING) 2st YEAR 1nd SEMESTER
SUPPLEMENTARY EXAM-2023
SUBJECT: COMPUTER PROGRAMING-II
(Name in full)

Time: /Three hours

Full Marks 100
(50 marks for each part)

Use a separate Answer-Script for each part

No. of Question	PART-II	
1	Answer **any two** Questions: a) Write step-wise Algorithm and draw the flow chart to find out roots of given a quadratic equation. b)Distinguish between function subprogram and subroutine subprogram c)Write short notes on different type of for-Loop & Rules to be followed in written for-Loop	5x2=10
2	Answer **any five** Questions. i) Write a C program to the sum of following series for the first N terms, using function subprogram. $$y = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} \cdots \cdots \cdots$$ ii) Write a C program to find number of days from given input as month and year. iii) Write a C program, to product of two Matrices [A] and [B], both of size (2 x 3) and (3 x 2) respectively and store the result in a separate matrix [C]. iv) Given four-digit integer number, write a C program to print it in reverse and also find sum of the digits v) Write a C program to find the value of $^n c_r$, using function subprogram. vi)Write a C program to print ascending order form given input as N number integer	5x8=40