Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JUN 2023

Semester : Semester IV - 2021
Course Code : CIV2013
Course Name : Sem IV - CIV2013 - Analysis of Determinate Structures
Program : CIV

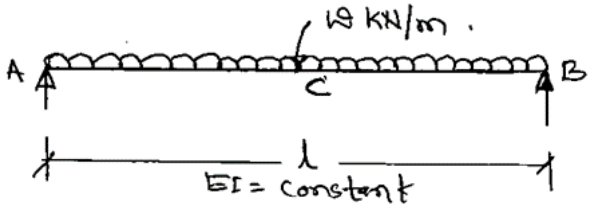
Date : 19-JUN-2023
Time : 9.30AM - 12.30PM
Max Marks : 100
Weightage : 50%

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

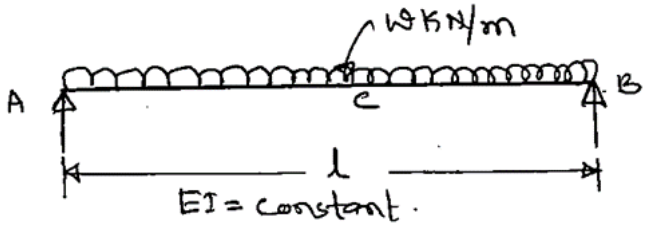
ANSWER ALL THE QUESTIONS **(4 X 5 = 20M)**

1. Determine the maximum slope and deflection for the simply supported beam loaded as shown in the fig by moment area method. Take EI = Constant



(CO4) [Knowledge]

2. Calculate the maximum slope and deflection for the simply supported beam loaded as shown in the fig conjugate beam method Take EI = Constant

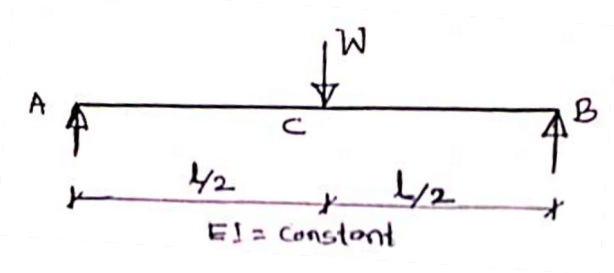


(CO4) [Knowledge]

3. A symmetrical three hinged parabolic arch of span 40 m and central rise 8 m is carrying a UDL of magnitude 25 kN/m on left half of the arch. Calculate the reaction at the supporting points.

(CO2) [Knowledge]

4. Determine the maximum slope and deflection for the simply supported beam subjected to concentrated load at the center of the beam as shown in the fig by moment area method. Take EI = Constant

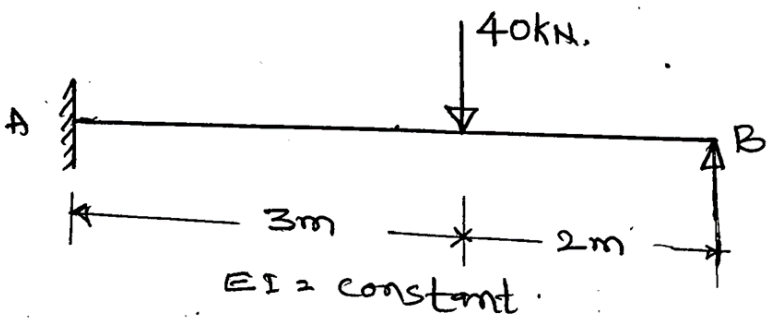


(CO4) [Knowledge]

PART B

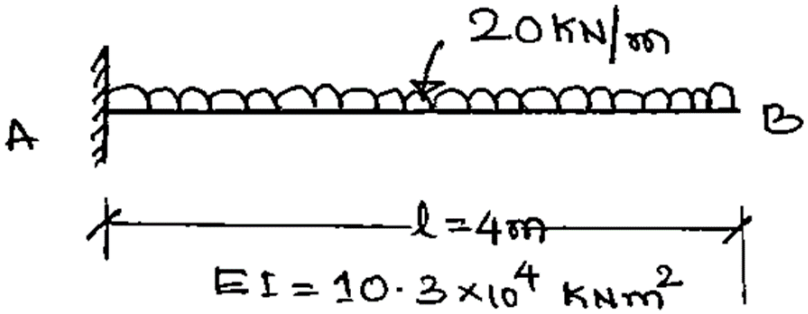
ANSWER ALL THE QUESTIONS **(5 X 10 = 50M)**

5. Using Consistent Deformation method, analyze the propped cantilever beam loaded as shown in fig and draw the BMD & SFD. Take EI = Constant.



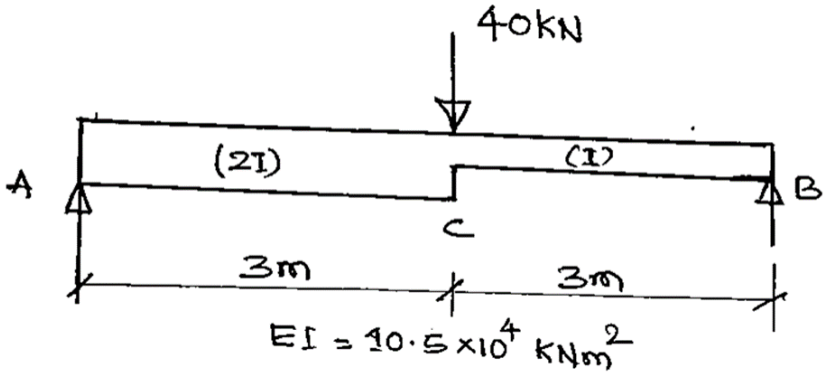
(CO3) [Comprehension]

6. Calculate the slope and deflection at free end for the cantilever beam loaded as shown in the fig by moment area method. Take EI = 10.3 x 10^4 kN-m²



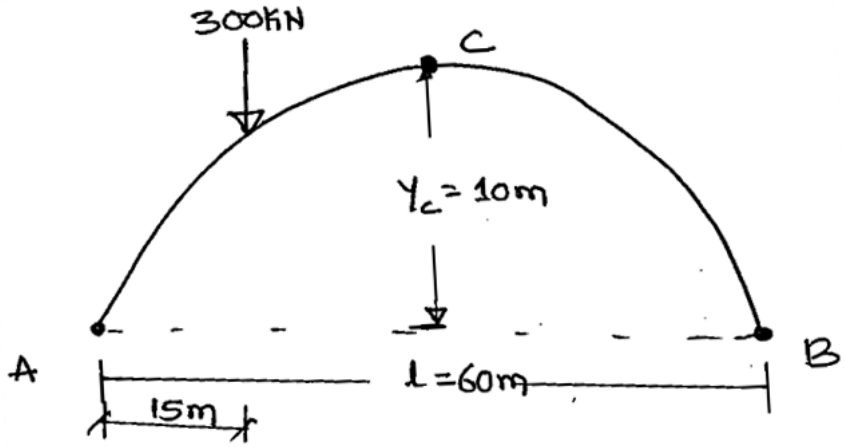
(CO4) [Comprehension]

7. Determine the maximum slope and deflection for the simply supported beam with varying section loaded as shown in the fig by conjugate beam method Take EI = 10.5 x 10^4 kN-m²



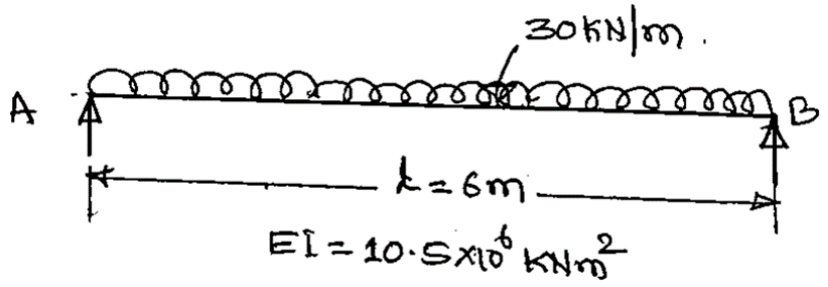
(CO4) [Comprehension]

8. A symmetrical three hinged parabolic arch of span 60 m and central rise 10 m is carrying a point load of magnitude 300 kN at distance 15m from the left support as shown in fig. Calculate the reaction at the supporting points and draw BMD.



(CO2) [Comprehension]

9. Determine the maximum slope and deflection for the simply supported beam loaded as shown in the fig conjugate beam method Take EI = 10.5 x 10^6 kN-m²



(CO4) [Comprehension]

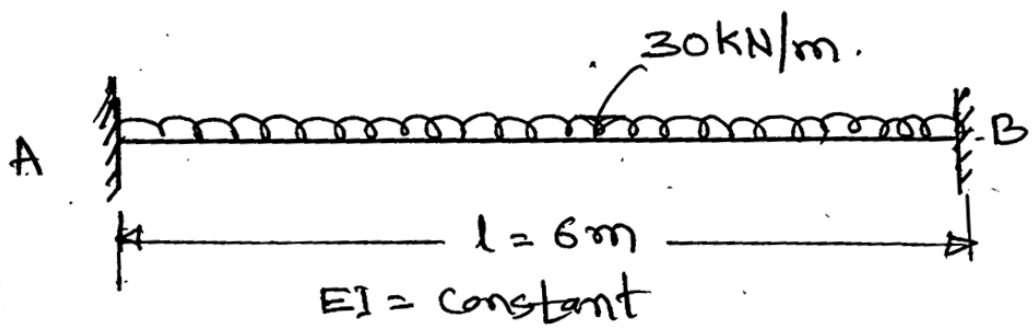
PART C

ANSWER ALL THE QUESTIONS **(2 X 15 = 30M)**

10. A cable is supported on piers 100m apart at the same level and has a central dip of 10m. Calculate the maximum tensile force induced in the cable, when it is subjected to UDL of magnitude 25 kN/m throughout its length. Also, determine the vertical force on the pier and maximum bending moment at the base of pier for the following cases:
Case: a) The cable passes over a pulley
Case: b) The cable passes over a saddle
Take back stay inclined at 60° to the vertical and height of the pier is 20m.

(CO2) [Application]

11. Analyze the Fixed beam loaded as shown in fig and draw the BMD & SFD, use consistent deformation method. Take EI = Constant.



(CO3) [Application]