

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES  
Online End Semester Examination, Dec 2021

Programme Name: B.Tech. Civil Engineering

Semester : V

Course Name : Structural Engineering

Time : 03 hrs

Course Code : CIVL 3018

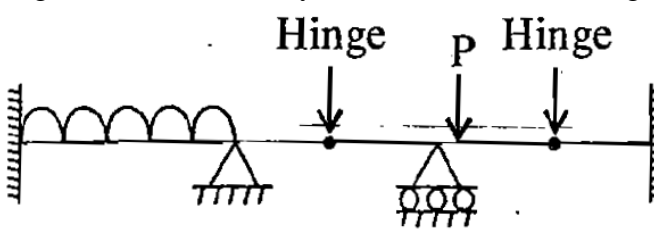
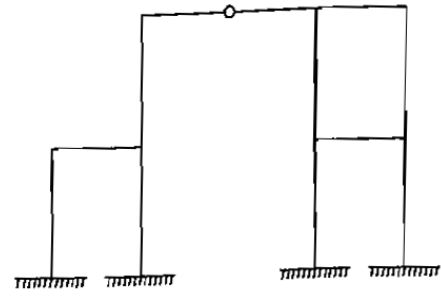
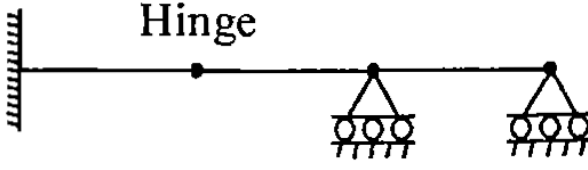
Max. Marks : 100

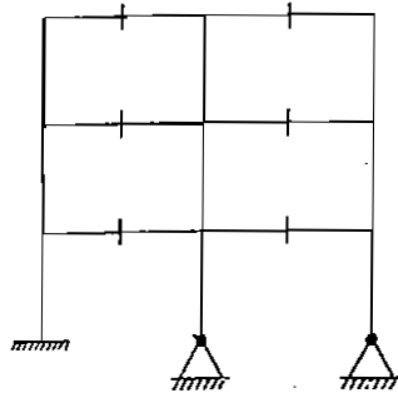
Nos. of page(s) : 3

Instructions:

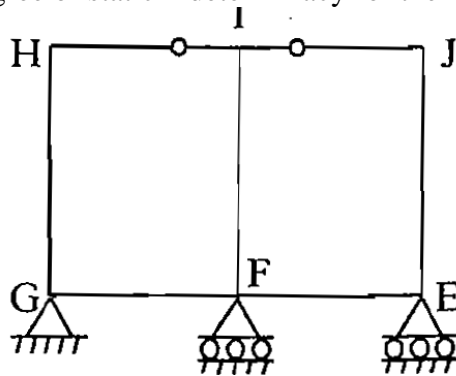
Answer all questions of Section A, B & C

SECTION A

S. No.		Marks	CO
Q 1	Determine the total degree of indeterminacy of the beam shown in figure. 	4	CO1
Q 2	Calculate degree of static indeterminacy for the frame 	4	CO1
Q 3	Determine the degree of indeterminacy for the beam 	4	CO1
Q 4	Determine the total degree of static indeterminacy for the frame	4	CO1



Q 5 Determine the total degree of static indeterminacy for the frame



4

CO1

**SECTION B**

Q 6 Considering a simply supported beam subjected to a point load at midspan, the maximum strain will take place at the centre of the span where a plastic hinge will be formed at yield of full section. The remainder of the beam will remain straight, thus the entire energy will be absorbed by the rotation of the plastic hinge. Calculate the plastic moment capacity of the beam.

10

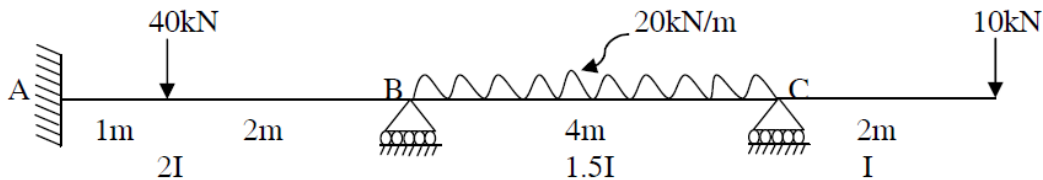
CO4

Q 7 Calculate shape Factor for  
a) Rectangular Section  
b) Triangular Section

10

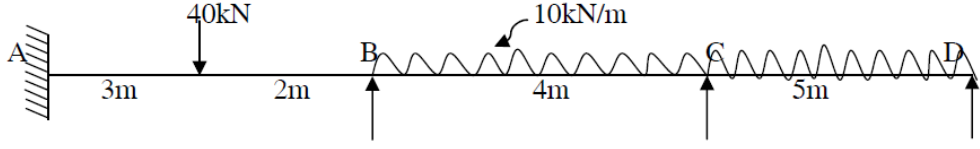
CO4

Q 8 Analyse the continuous beam and draw BMD by slope deflection Method.

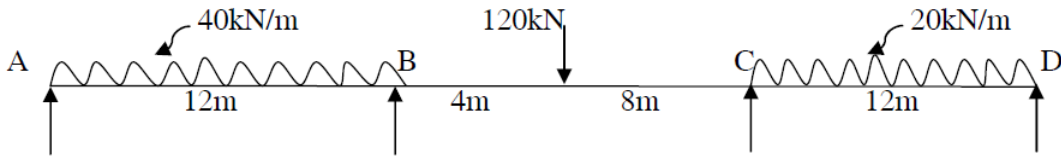
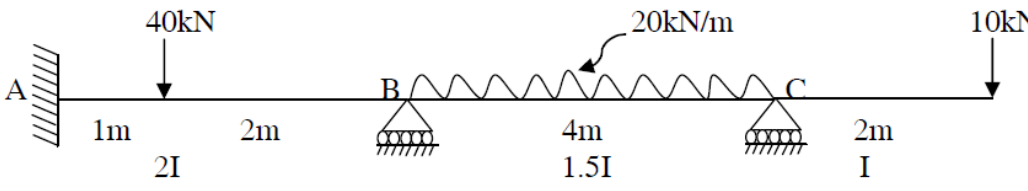


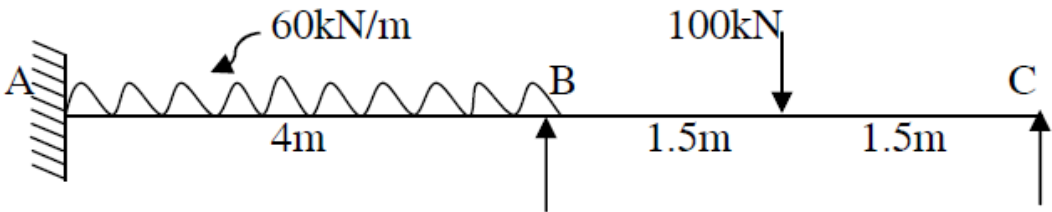
10

CO2

Q 9	<p>Analyse the continuous beam and draw BMD by Moment distribution Method.</p>  <p style="text-align: center;"><u>OR</u></p> <p>Analyse the above structure by kani's Method.</p>	<b>10</b>	<b>CO2</b>
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**SECTION-C**

Q 10	<p>Analyse the continuous beam shown in the figure by flexibility matrix method, draw BMD.</p>  <p style="text-align: center;"><u>OR</u></p> 	<b>20</b>	<b>CO3</b>
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Q 11	<p>Analyse the continuous beam shown in the figure by Stiffness matrix method, draw BMD.</p>  <p style="text-align: center;">Kinematic Indeterminacy <math>KI = 2 (\theta_B \text{ \&amp; } \theta_C)</math></p>	<b>20</b>	<b>CO3</b>
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