

Name:
Enrolment No:



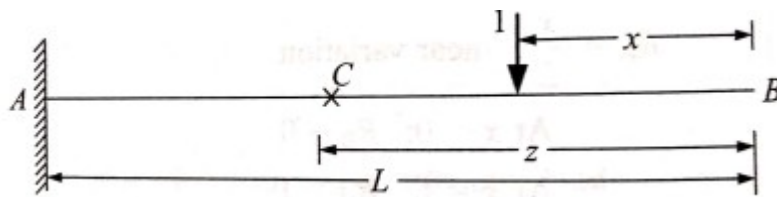
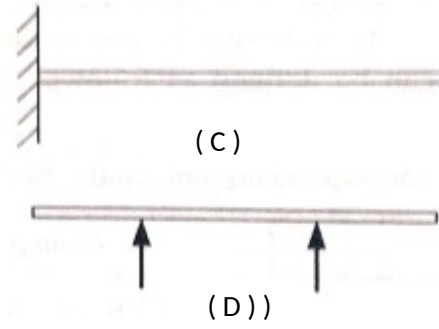
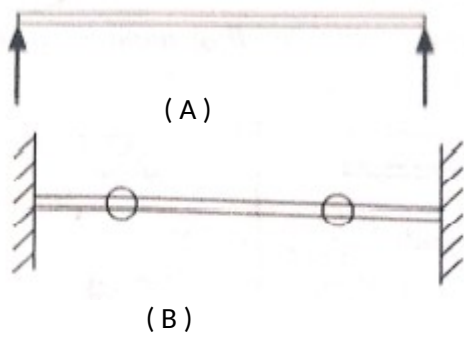
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Structural Analysis - 1
Program: B. Tech, Civil Engg
Course Code: CIVL 2002
Pages: 04
Instructions:

Semester: IV
Time 03 hrs.
Max. Marks: 100

SECTION A

S. No.		Marks	CO
Q 1	Find the stability & determinacy or indeterminacy of the following structure.	4	CO2
Q 2	<p>Find S (show)</p>	4	CO1
Q 3	Determine the slope & deflection at the free end of a cantilever beam as shown in figure by moment area method. (Take $EI = 4000\text{kNm}^2$)	4	CO1
Q 4	Draw conjugate beam for following:	4	CO1

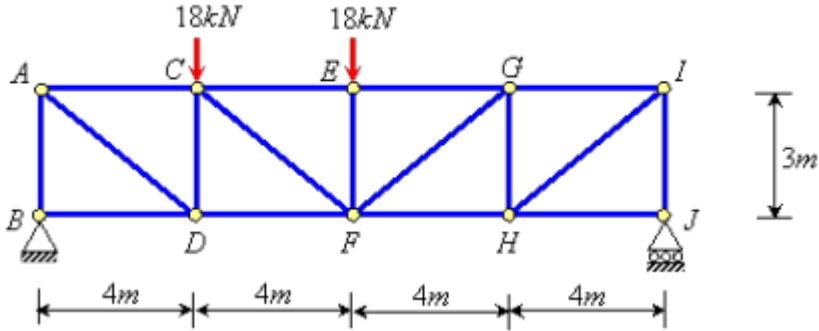
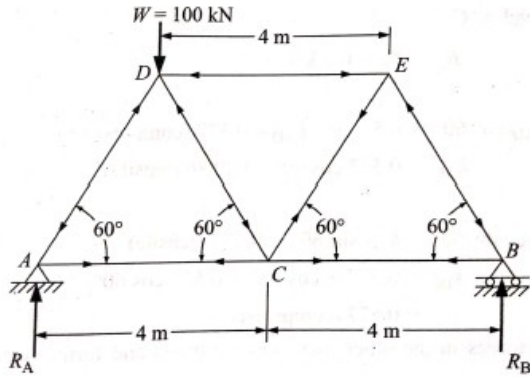
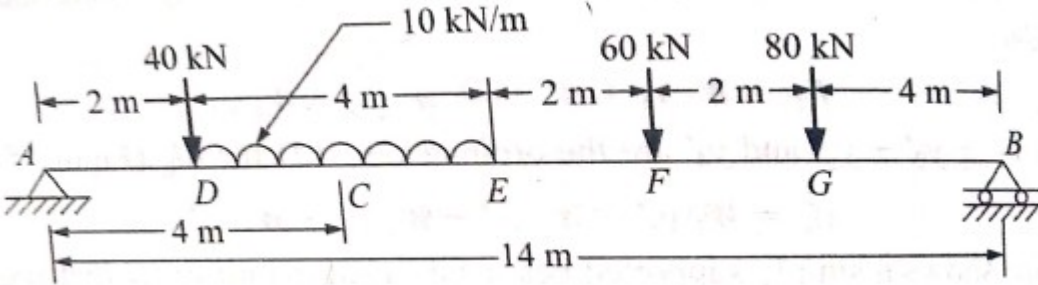


Q 5 Construct Influence line diagram for cantilever beam for shear force & bending moment at any section C as shown in fig.

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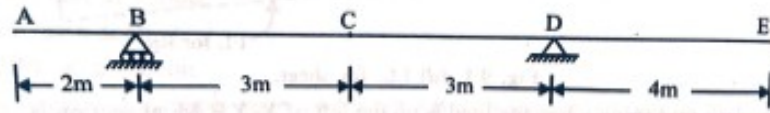
CO3

SECTION B

Q 6	<p>Find the internal forces in the truss for members AB, AD, AC, EG, FG & FH</p> 	10	CO2
Q 7	<p>A three hinged parabolic arch hinged at the supports and at the crown has a span of 24m and a central rise of 4m. It carries a concentrated load of 50 kN at 18m from left support and a uniformly distributed load of 30kN/m over the left-half portion. Determine the moment, thrust and radial shear at a section 6m from the left support.</p>	10	CO2
Q 8	<p>A pin jointed truss loaded with single load $W = 100$ kN as shown in fig. If the area of cross-section of all members shown in figure is 1000 mm^2, what is the vertical deflection of point C? Use unit load method. Take $E = 200 \text{ kN mm}^2$ for all members</p> 	10	CO1
Q 9	<p>Using influence line diagrams determine the shear force and bending moment at section C in simply supported beam shown below.</p> 	10	CO3

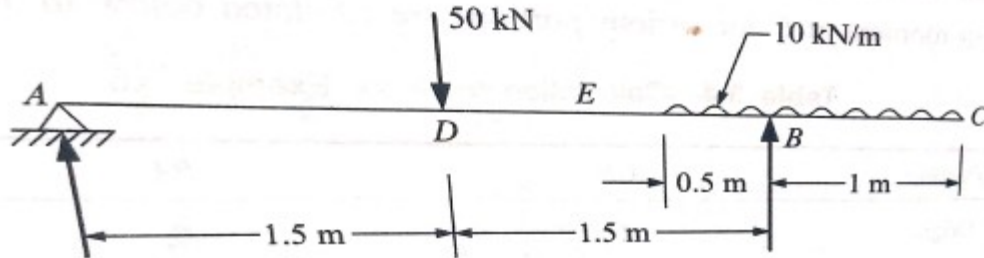
OR

For the beam shown below construct influence line diagram for (a) reaction at B (b) reaction at D (c) moment at C and (d) shear force at D



SECTION-C

Q 10 Determine the deflection at the free end of the overhang beam shown in figure below by unit load method. Assume uniform flexure rigidity.

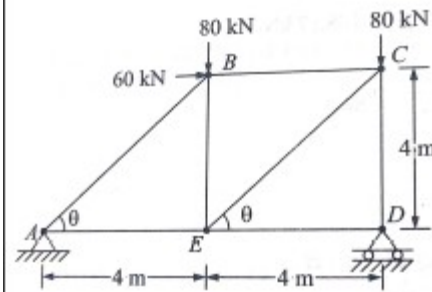
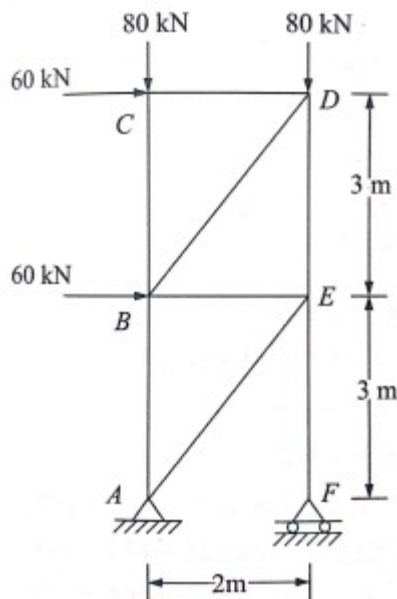


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CO1

Q 11 Analyse either of the truss shown below by method of joints

OR



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CO2

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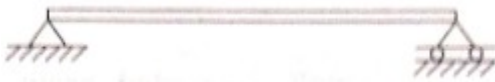
SECTION A

S. No.

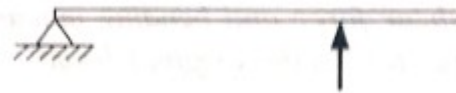
Marks

CO

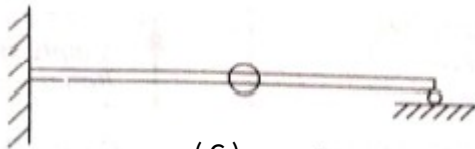
Q 1



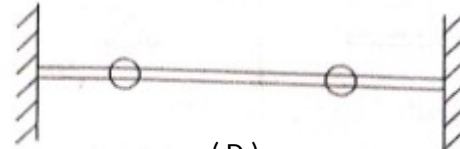
(A)



(B)



(C)

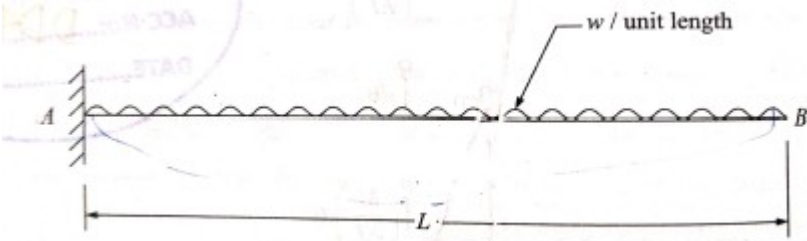
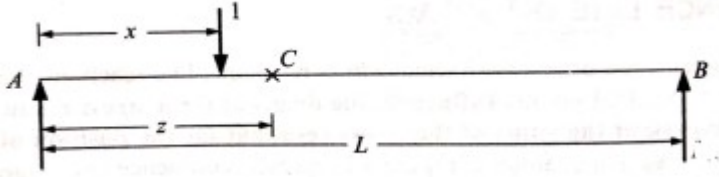
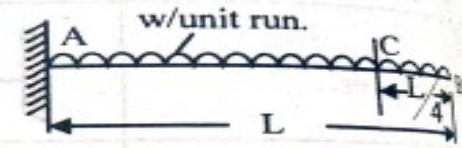
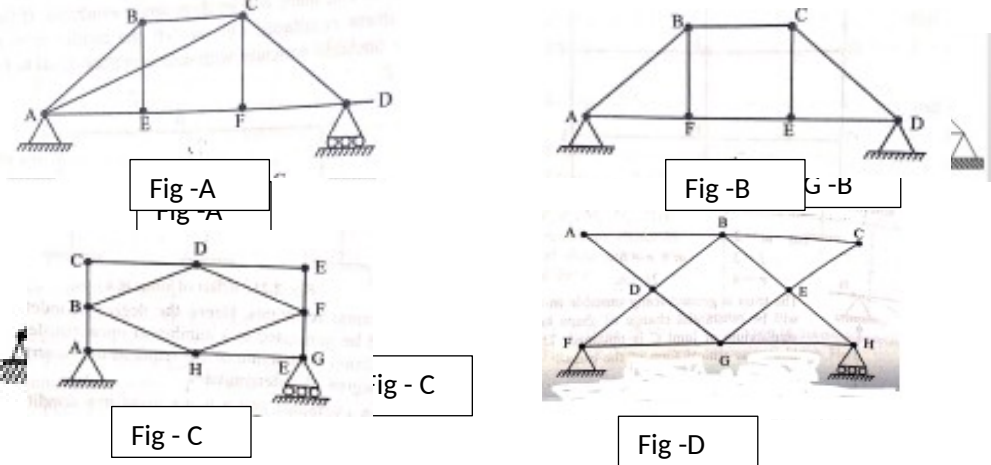


(D)

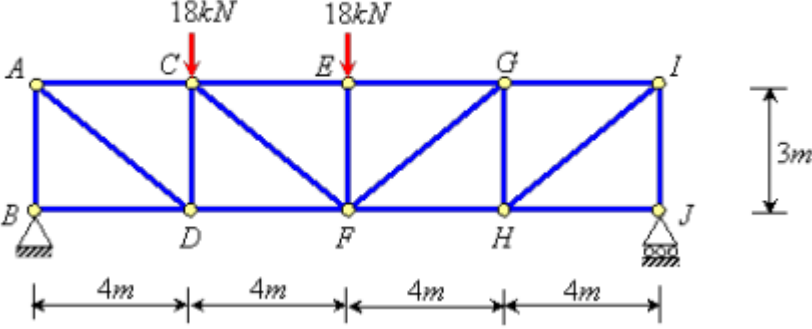
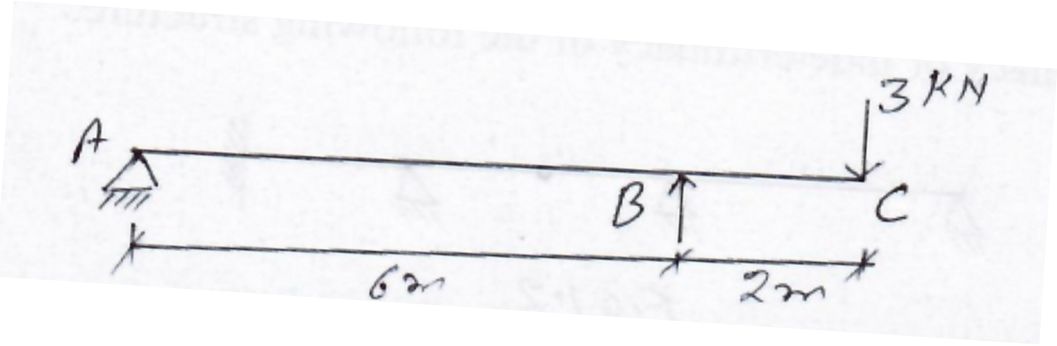
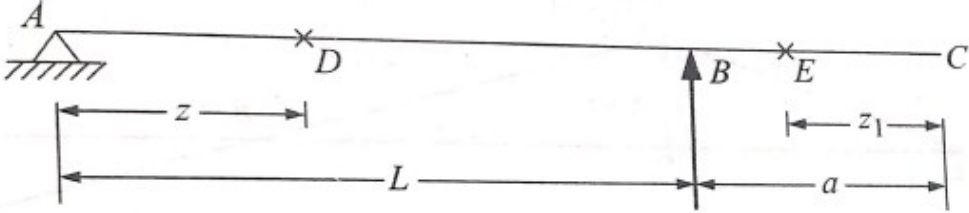
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CO1

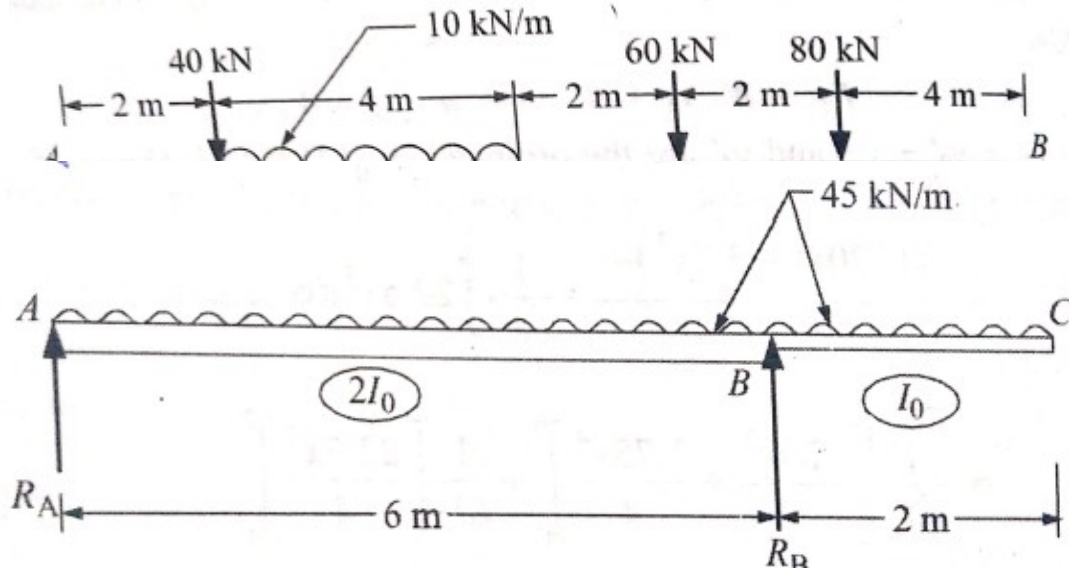
Draw conjugate beam for following:

<p>Q 2</p>	<p>Determine the slope & deflection at the free end of a cantilever beam subjected to uniformly distributed load over an entire span as shown in figure by moment area method.</p> 	<p>4</p>	<p>CO1</p>
<p>Q 3</p>	<p>Construction Influence line diagram for simply supported beam for shear force & bending moment at any section C as shown in fig.</p> 	<p>4</p>	<p>CO3</p>
<p>Q 4</p>	<p>Find Slope & deflection at point B & C for cantilever beam with UDL using conjugate beam method as shown below</p> 	<p>4</p>	<p>CO1</p>
<p>Q 5</p>	<p>Find the stability & determinacy or indeterminacy of the following structure.</p> 	<p>4</p>	<p>CO2</p>

SECTION B

Q 6	<p>Find the internal forces in the truss for members AB, AD, AC, EG, FG & FH</p> 	10	CO2
Q 7	<p>Determine the vertical deflection at free end and rotation at A in the overhanging beam shown below. Assume EI constant. Use Castigliano's Method</p> 	10	CO1
Q 8	<p>A three hinged circular arch hinged at the supports and at the crown has a span of 40m and a central rise of 8m. It carries a concentrated load of 100 kN at right quarter span point and a uniformly distributed load of 20kN/m over the left-half portion. Determine the reactions at supports, normal thrust and shear at a section 10m from the left support.</p>	10	CO2
Q 9	<p>For typical overhang beam shown below, draw Influence line diagram for (a) reaction at A & B (b) Shear force at D & E (c) Bending moment at D & E</p>  <p style="text-align: center;">OR</p>	10	CO3
Using influence line diagrams determine the shear force and bending moment at			

section C in simply supported beam shown below.



Q 10

Determine the deflection at the free end of the overhang beam with UDL shown in figure below by unit load method. Flexure rigidity as shown.

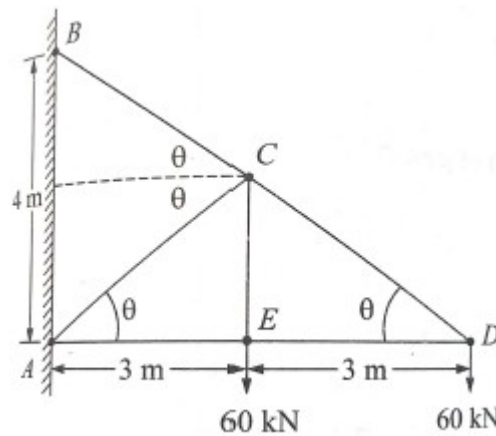
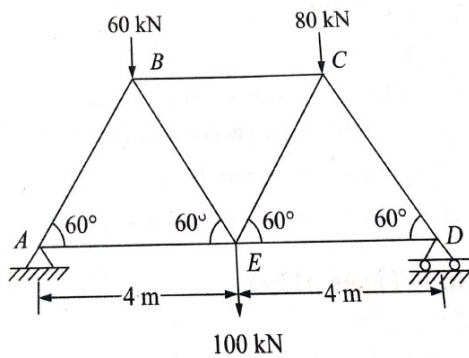
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CO1

Q 11

Analyse either of the truss shown below by method of joints

OR



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CO2