Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

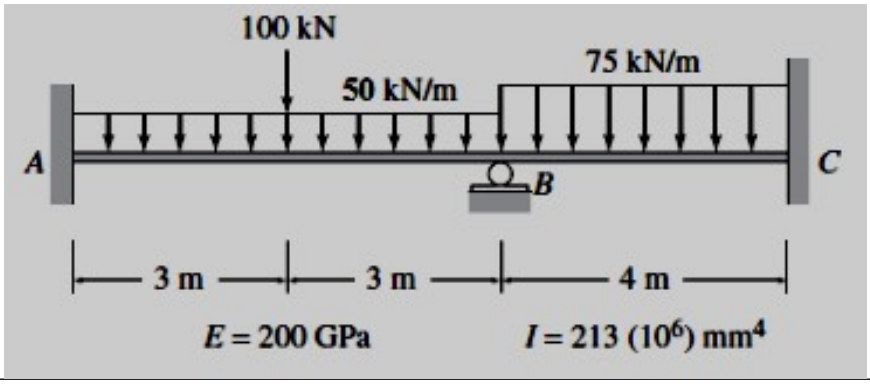
Programme Name: B.Tech. Civil Engineering **Semester : V**
Course Name : Structural Analysis II **Time : 03 hrs**
Course Code : CEEG 307 **Max. Marks : 100**
Nos. of page(s) : 3

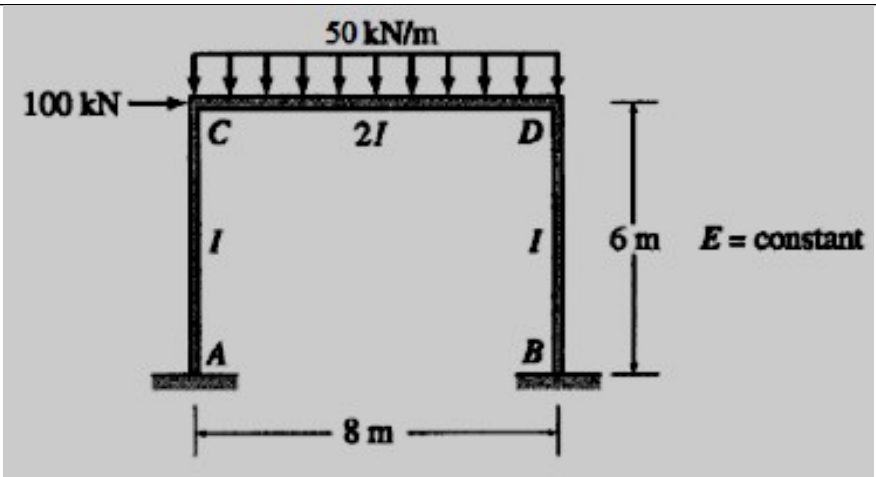
Instructions: **Answer all questions of Section A, B & C**
(Assume all the necessary data if necessary) (Internal Choice is there in Q 4-Section B & Q 5- Section C)

SECTION A

S. No.		Marks	CO
Q 1	Calculate the shape factor for I section with; Width of flange = 100mm Depth of flange = 10mm Width of Web = 10mm Height of I Section = 250mm Take yield stress is 250 N/mm^2. Find the plastic moment capacity of the section.	**10**	**CO4**
Q 2	Derive Shape factor for circular section with proper diagram.	**10**	**CO4**

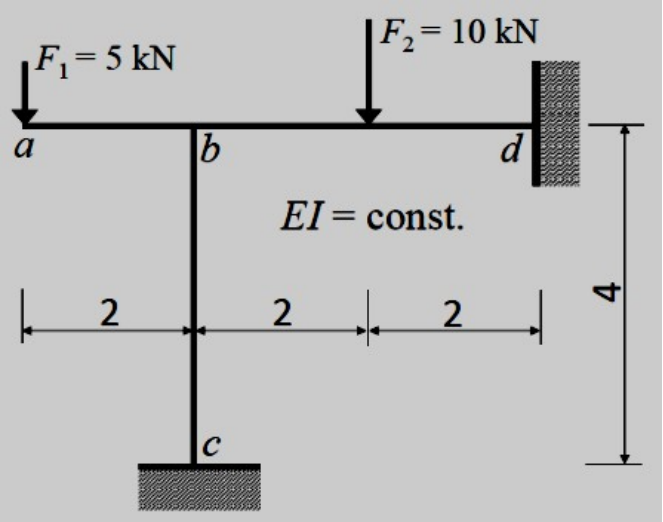
SECTION B

Q 3	For the following structures using moment distribution method, find the end moments only. Given support B settles by 8 mm in downward direction. Also draw the moment diagram. 	**20**	**CO1** **CO2**
Q 4	Determine the end moments by using slope deflection method for the portal frame shown in figure. Also draw the moment diagram.	**20**	**CO1** **CO2**



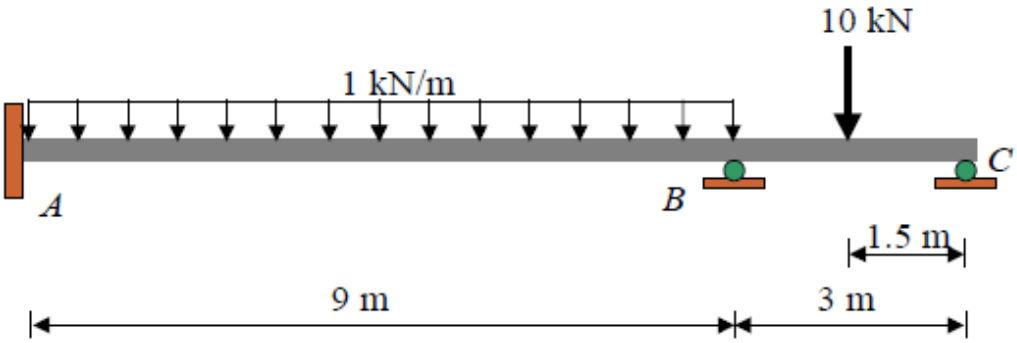
OR

Determine the end moments by using slope deflection method for the portal frame shown in figure. Also draw the moment diagram.



SECTION-C

Q 5	For the beam shown, use the stiffness method to: (a) Determine the deflection and rotation at B. (b) Determine all the reactions at supports. (c) Draw the quantitative bending moment diagram.	**20**	**CO1** **CO3**



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For the beam shown, use the stiffness method to:
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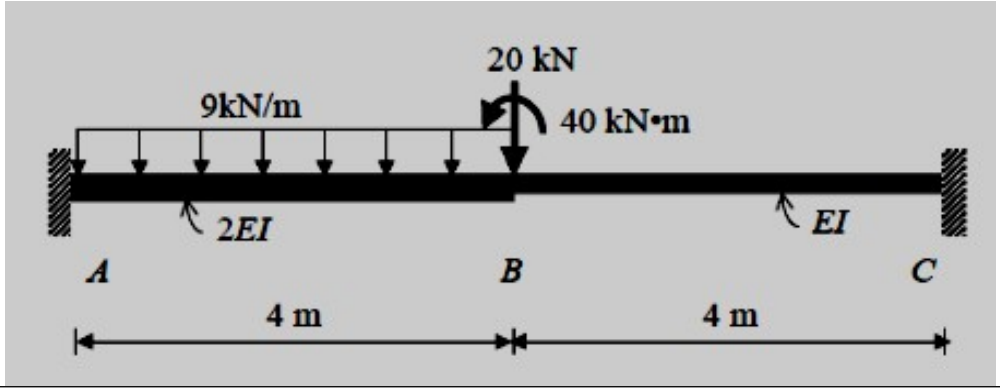
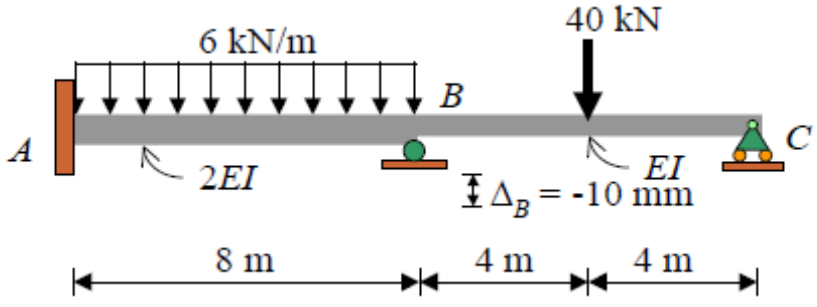
(b) Determine all the reactions at supports.
(c) Draw the quantitative bending moment diagram.



Q 6

For the beam shown:
(a) Use the flexibility method to determine all the reactions at supports.
(b) Draw the quantitative free-body diagram of member.
(c) Draw the quantitative shear diagram, bending moment diagram and qualitative deflected shape.

Take I = 200(10^6) mm^4 and E = 200 GPa and support B settlement 10 mm.



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CO1
CO3

CONFIDENTIAL

Name of Examination (Please tick, symbol is given)	:	**MID**		**END**	☐	**SUPPLE**	
Name of the School (Please tick, symbol is given)	:	**SOE**	☐	**SOCS**		**SOP**	
Programme	:	**B.Tech. Civil Engineering**					
Semester	:	**V**					
Name of the Course	:	**Structural Analysis II**					
Course Code	:	**CEEG 307**					
Name of Question Paper Setter	:	**Susanta Kumar Sethy**					
Employee Code	:	**40001073**					
Mobile & Extension	:	**7830323739/1221**					
Note: Please mention additional Stationery to be provided, during examination such as Table/Graph Sheet etc. else mention "NOT APPLICABLE":							

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Date of Examination	:	
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Note: - Pl. start your question paper from next page

Model Question Paper (Blank) is on next page

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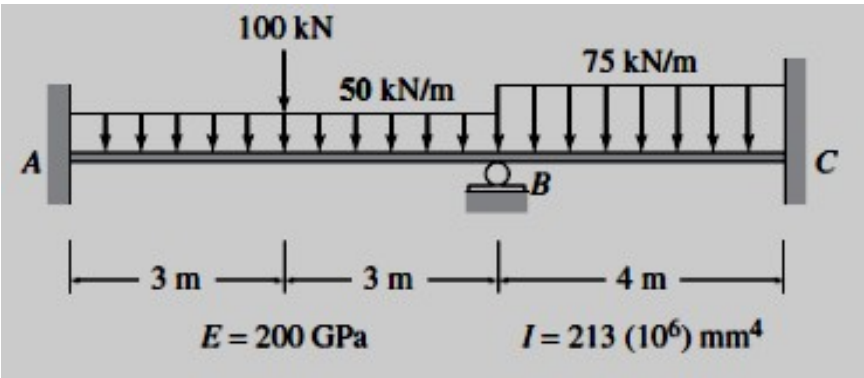
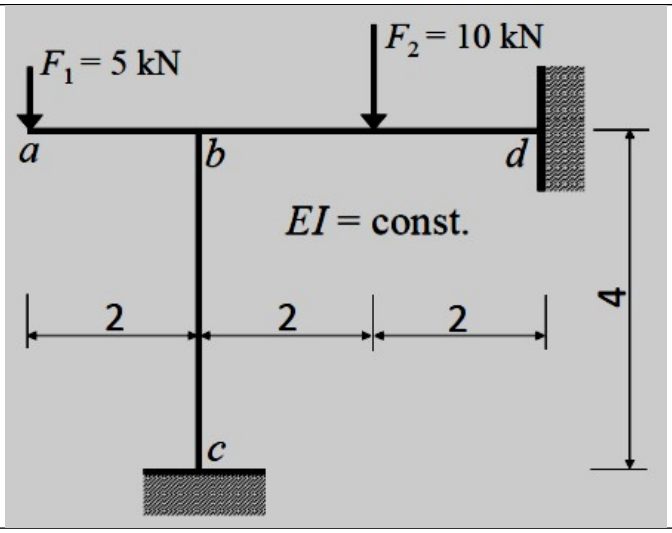
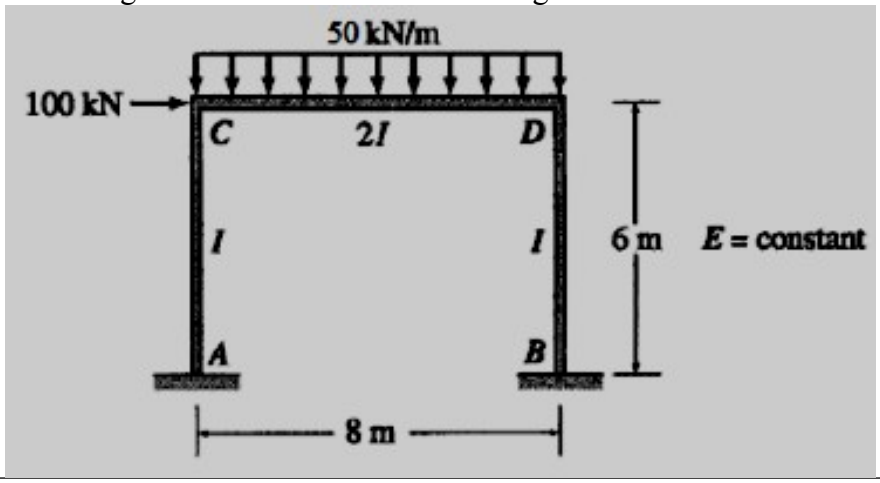
Nos. of page(s) : 3
Instructions: Answer all questions of Section A, B & C
(Assume all the necessary data if necessary) (Internal Choice is there in Q 3-Section B & Q 5- Section C)

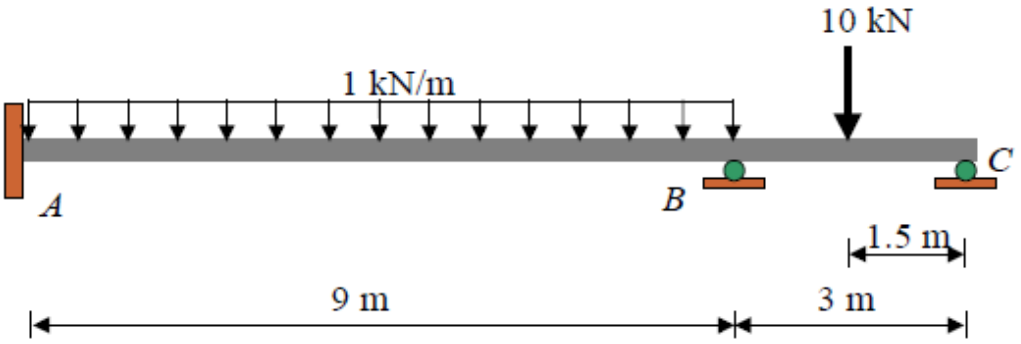
SECTION A

S. No.		Marks	CO
Q 1	Determine the shape factor of the T section with width of flange 120mm, Depth of flange 10mm , width of web = 10mm, Height of T beam = 120 mm.	**10**	**CO4**
Q 2	Derive Shape Factor for a rectangular section with proper diagram.	**10**	**CO4**

SECTION B

Q 3	For the following structures using slope deflection method, find the end moments only. Given support B settles by 8 mm in downward direction. Also draw the moment diagram.  **OR** Determine the end moments by using moment distribution method for the portal frame shown in figure. Also draw the moment diagram.	**20**	**CO1 CO2**

			
Q 4	Determine the end moments by using moment distribution method for the portal frame shown in figure. Also draw the moment diagram. 	**20**	**CO1** **CO2**
SECTION-C			
Q 5	For the beam shown, use the flexibility method to: (a) Determine the deflection and rotation at B. (b) Determine all the reactions at supports. (c) Draw the quantitative bending moment diagram.	**20**	**CO1** **CO3**



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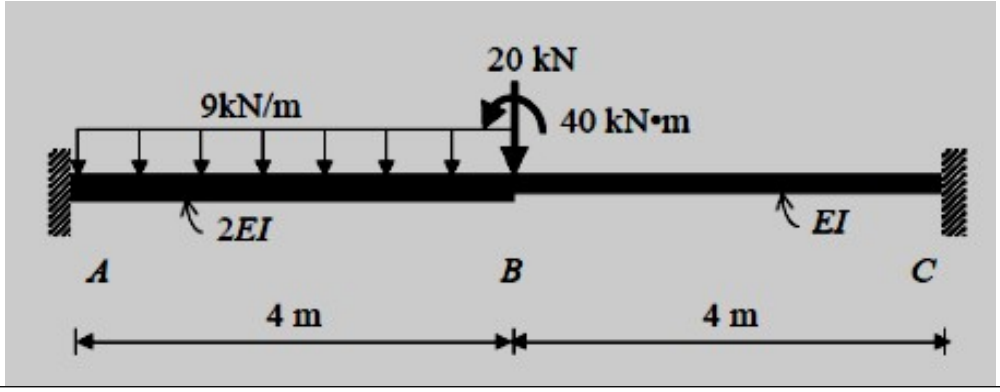
For the beam shown, use the flexibility method to:
(a) Determine the deflection and rotation at B.
(b) Determine all the reactions at supports.
(c) Draw the quantitative bending moment diagram.



Q 6

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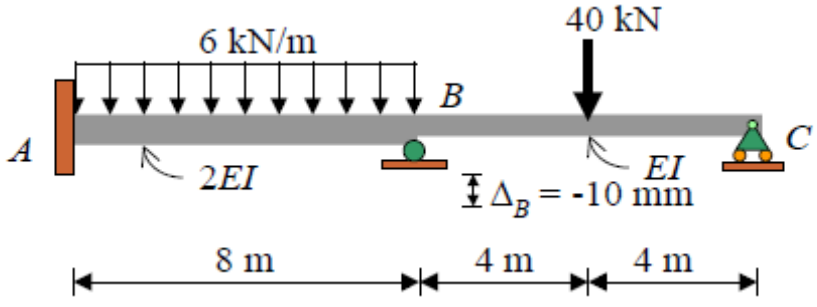

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CO1
CO3