

B. Tech. (Sem. V) (Main/Back) Examination, December - 2013
Civil Engineering
5CE1 Theory of Structure

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

*Attempt any five questions. Selecting one question from each unit.
 All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.*

Use of following supporting material is permitted during examination.
 (Mentioned in form No. 205)

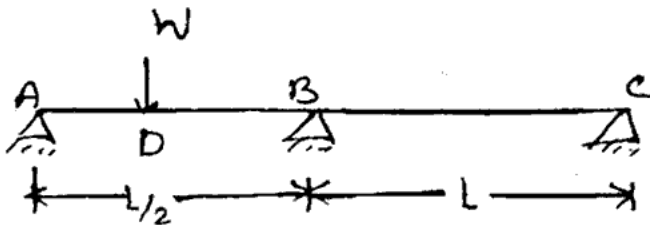
1. _____ NIL _____ 2. _____ NIL _____

UNIT - I

- 1 (a) Define following briefly :
- Static indeterminacy
 - Kinematic indeterminacy
 - Maxwell's Reciprocal theorem
 - Betti's theorem.

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- (b) A continuous beam ABC is loaded as shown in Fig. Determine all reactions and draw bending moment and shear force diagram.

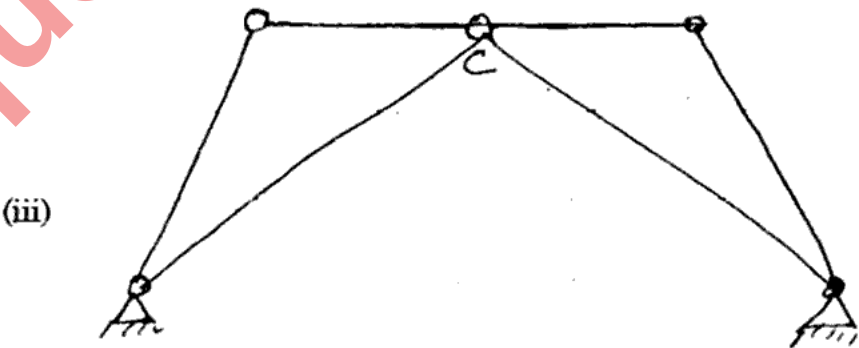
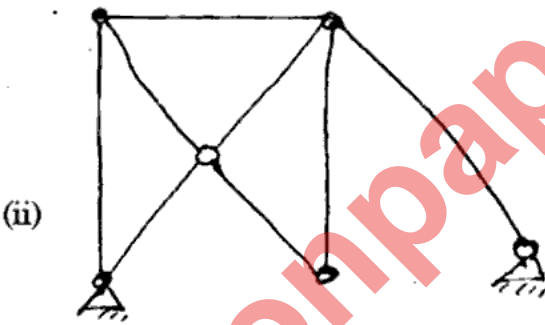
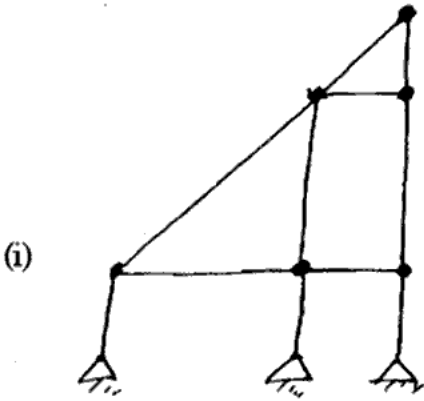


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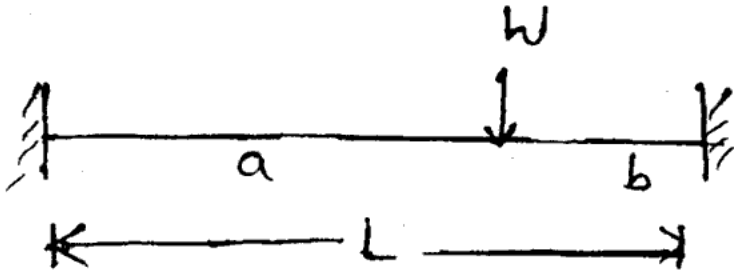
OR

1 (a) Find out total degree of indeterminacy of following :

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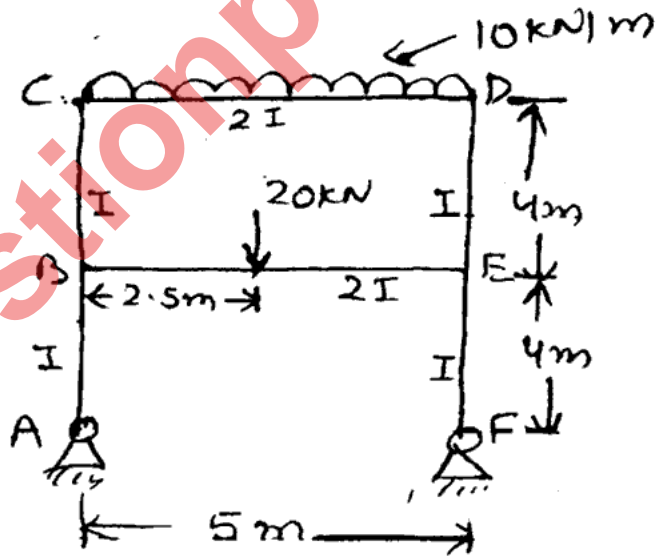
- (b) Discuss application of Area moment method. Also find out fixing End moment for following beam.



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UNIT - II

- 2 By using slope deflection method analyze the given frame.

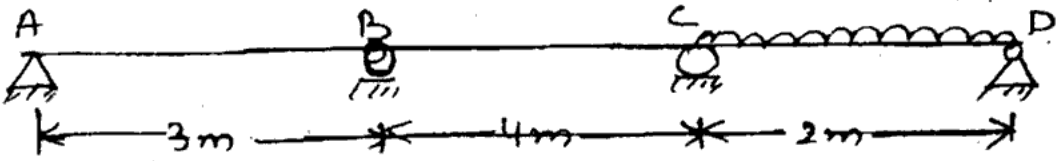


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OR



- 2 By using moment distribution method analyze the given continuous beam.



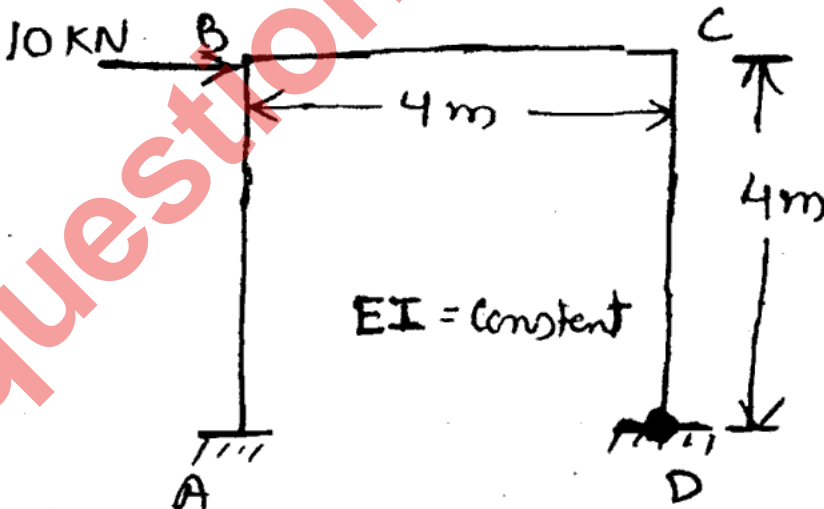
Given \rightarrow sinking of support B by 25 mm

$$I = 6 \times 10^6 \text{ mm}^4, E = 200 \text{ kN/mm}^2$$

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UNIT - III

- 3 Analyze the frame by column analogy method. rtuonline.com

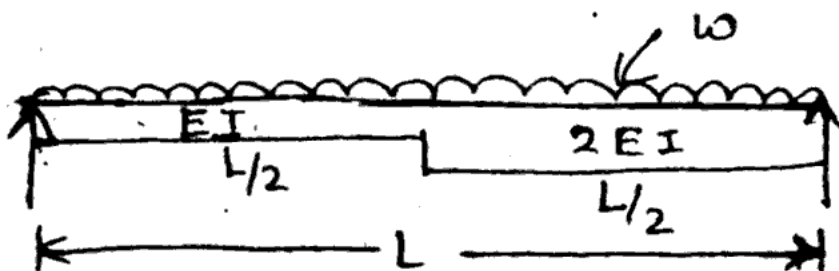


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OR



3 Find out the support reactions using conjugate beam method.



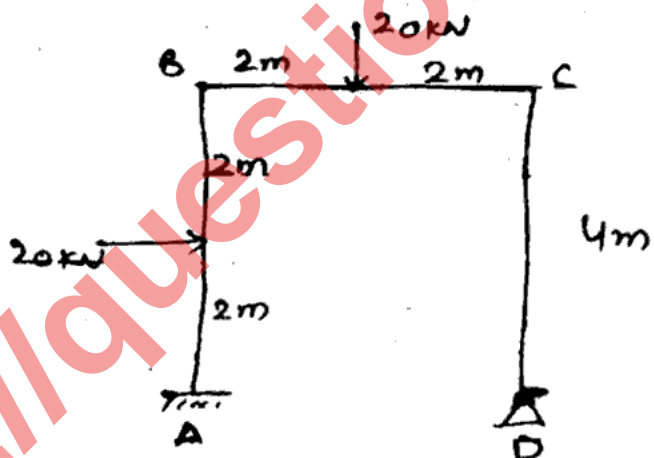
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UNIT - IV

4 (a) State Castigliano's first and second theorem.

4

(b) Find out for given frame by using min. strain energy theorem.



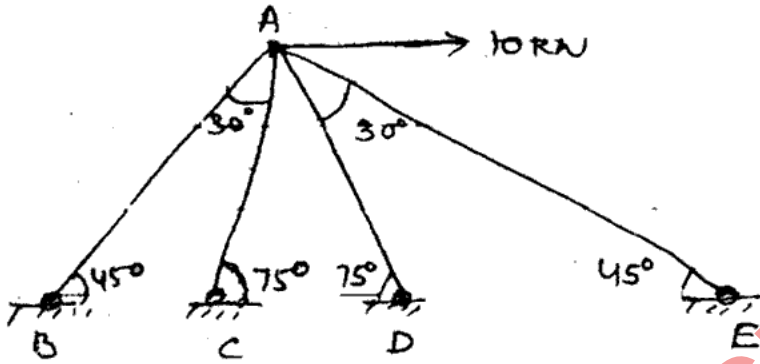
EI constant

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OR



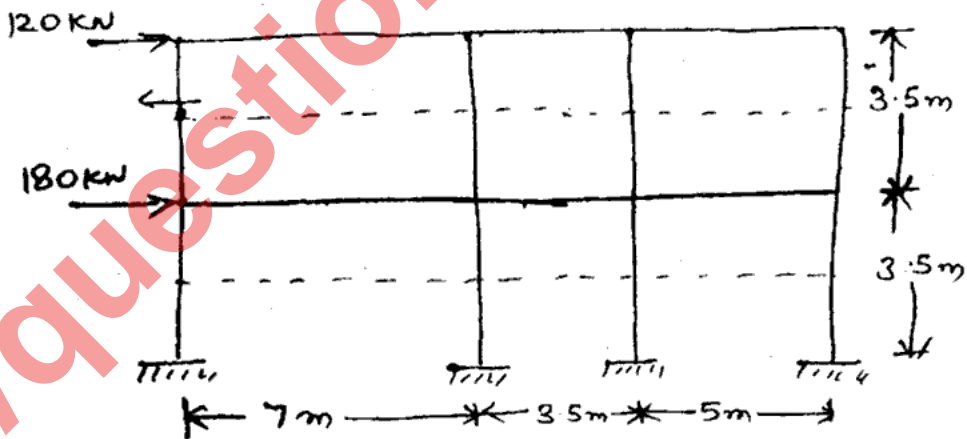
- 4 Find the forces in all the members of the frame shown in Figure. All the bars are of same area of cross section and are of same material.



16

UNIT - V

- 5 (a) Discuss about analysis of frames subjected to horizontal forces and also methods of analysis. 4
- (b) Analyze the frame by cantilever method, assuming that all the columns have same area of cross section.



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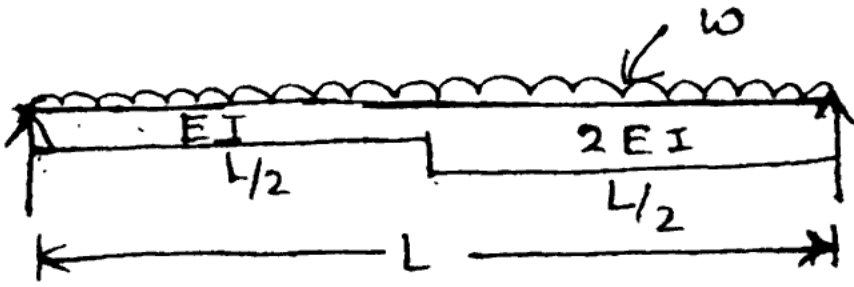
OR

- 5 Analyze the frame given above by Portal method.

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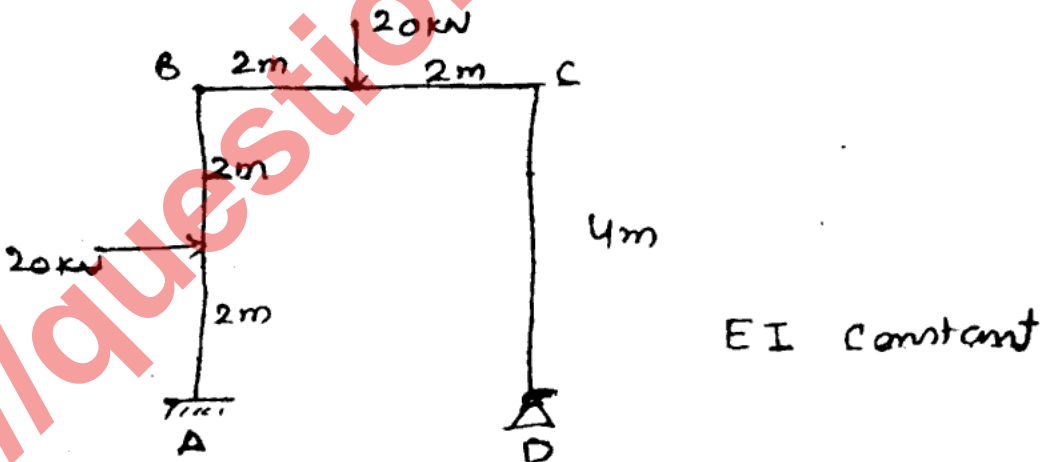
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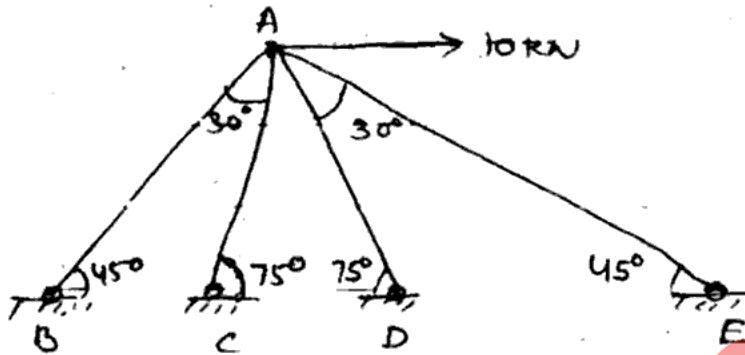


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OR



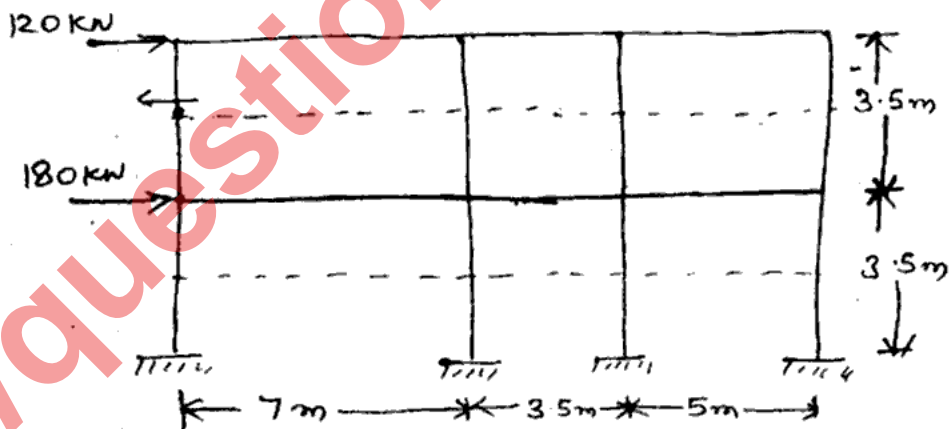
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