5E5061

Roll No. : ______

Total Printed Pages : 7

5E5061

B. Tech. (Sem. V) (Main & Back) Examination, November 2018
Civil Engineering
5CE1A Theory of Structures - I

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

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) Determine the static and kinematic indeterminancy of following structures shown in fig 1(a) and 1(b).

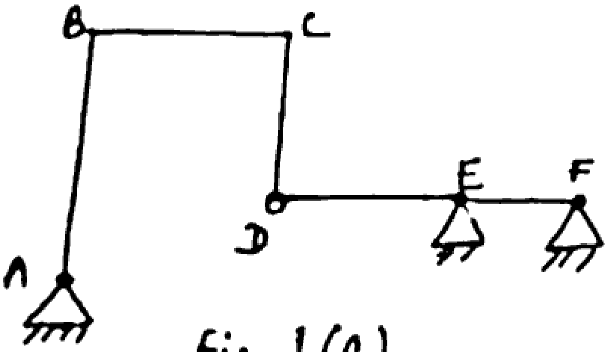

Fig 1(a)

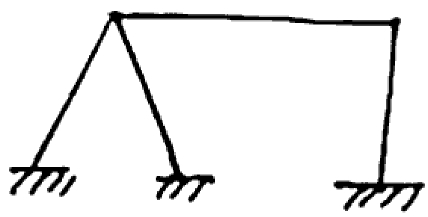

Fig 1(b)

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(b) Analysis the continuour beam ABC supported on an elastic column BD using Slope-Deflection method. Draw Bending Moment Diagram.

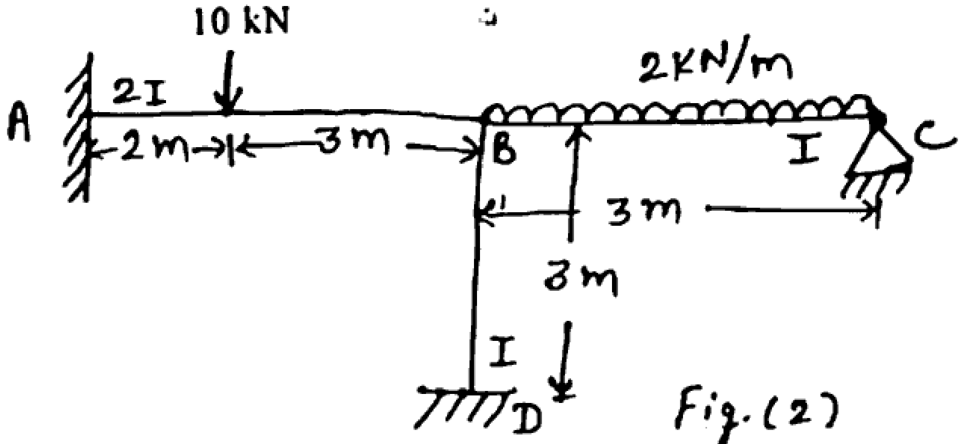

Fig.(2)

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OR

1 (a) Write Betti's theorem. 2

(b) Analysis the portal frame shown in fig. (3) by using Slope-Deflection Method.

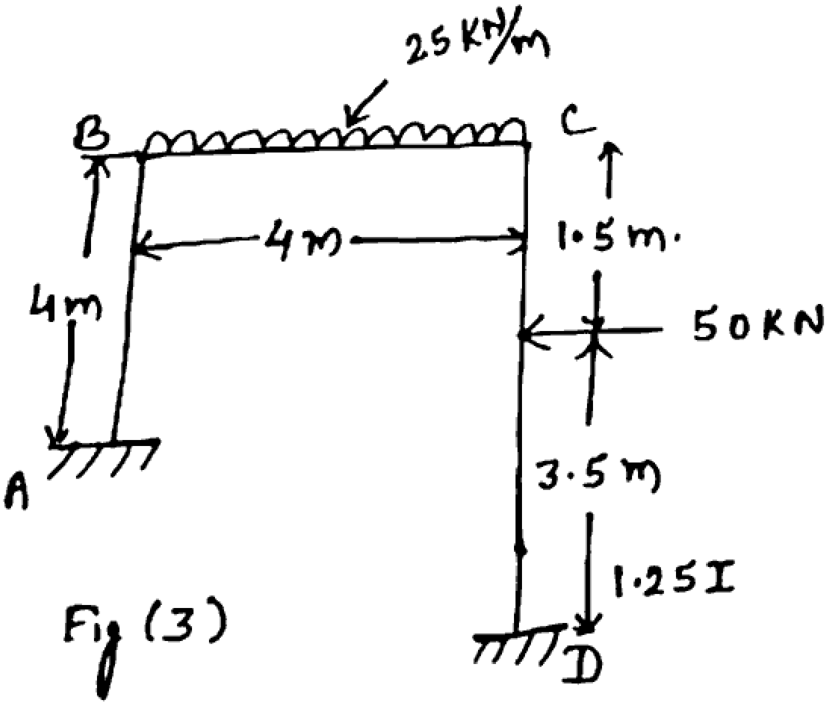


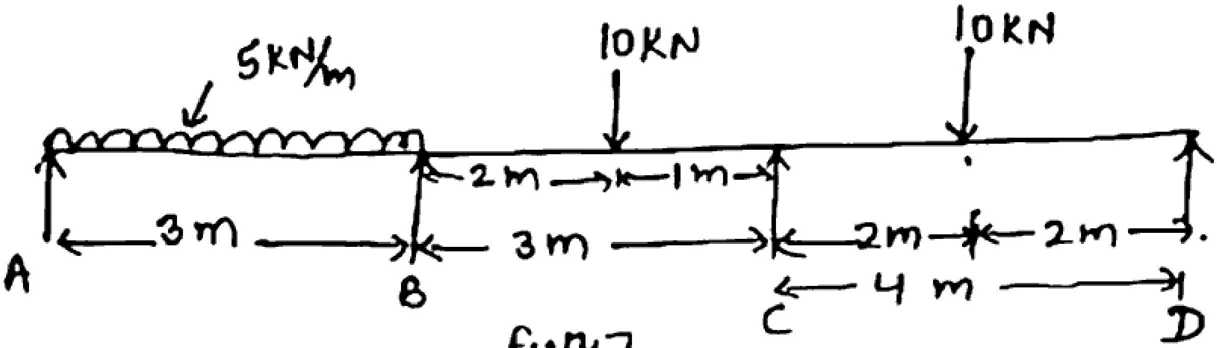
Fig (3)

1

UNIT - II

2 (a) Define distribution factor and carry over factor using Moment Distribution Method. **2**

(b) Analysis given continuous beam ABCD, if the support A sink by 10 mm, B sink by 30 mm and c settles by 20 mm. The moment of Inertia I is 2.4×10^6 mm^4, take $E = 2 \times 10^5$ N/mm^2.



Fig[4]

Also draw B.M.D. and deflected shape. **14**

OR

2 Analyze the give frame shown in fig. (5). Draw B.M.D. and deflected shape.

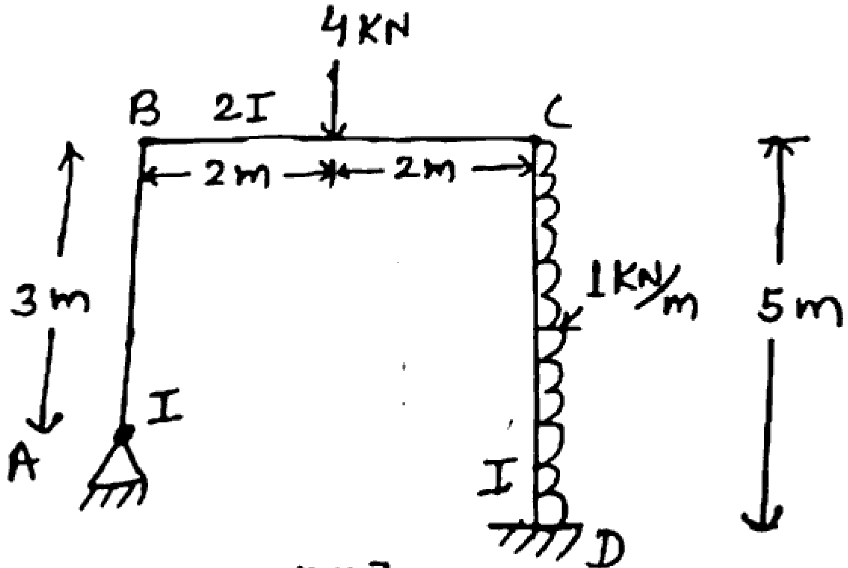


Fig. [5]

UNIT - III

3 Compute the forces in all the members of cantilever truss shown in fig. (6).

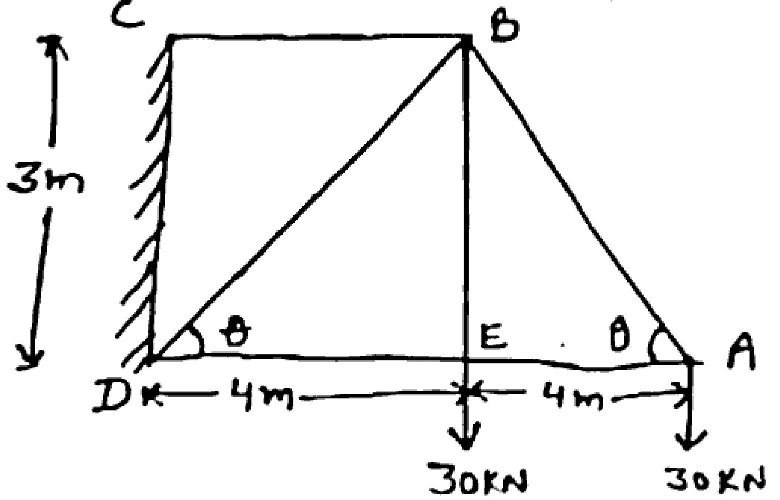


Fig [6]

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OR

3 Find the downward displacement of joint B in the thurx. Area of cross section is 900 mm^2. Take $E = 2 \times 10^5$ N/mm^2.

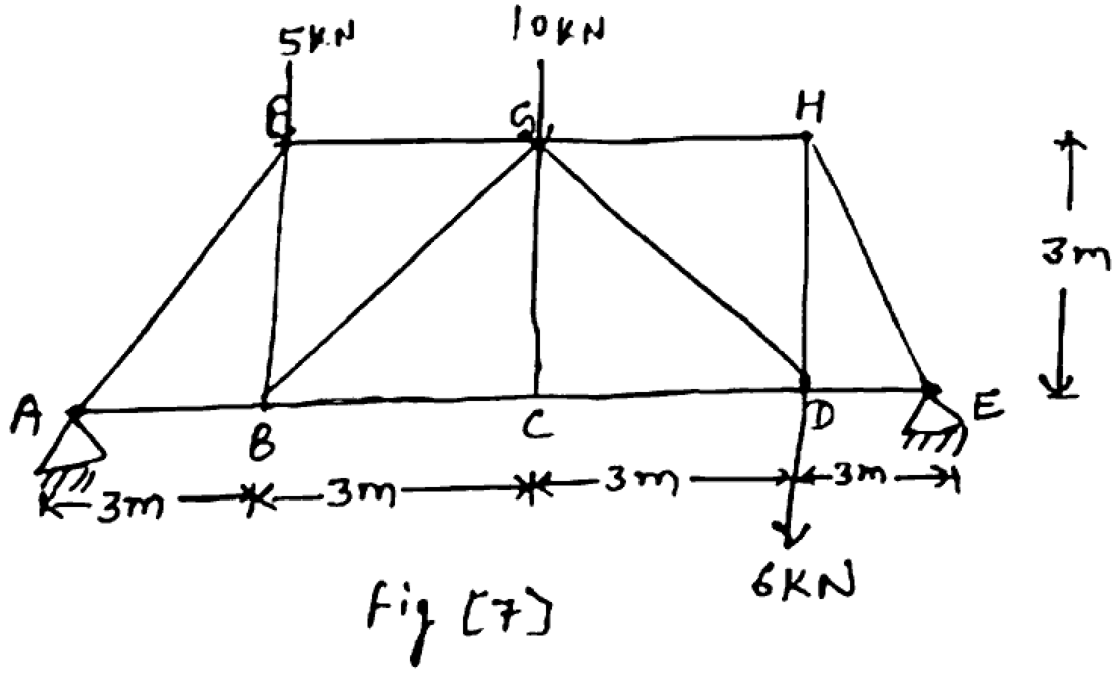

Fig [7]

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UNIT - IV

4 Using column analogy method, analyze the rigid joint structure.

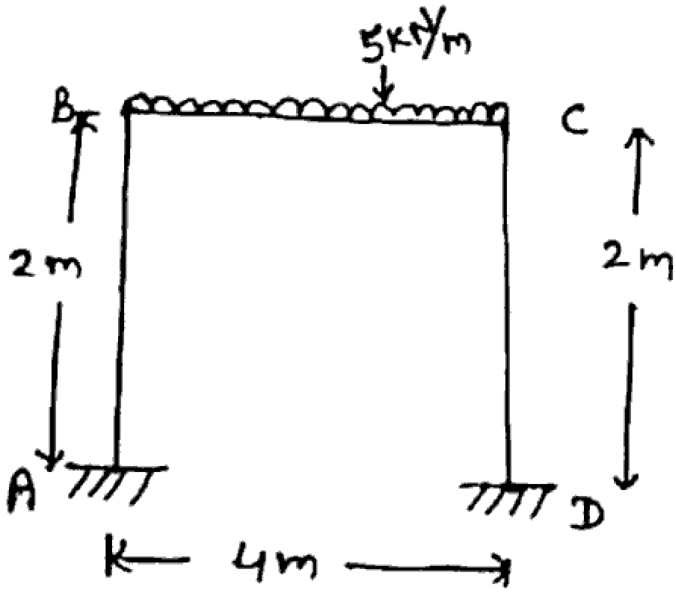

Fig [8]

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OR

4 Analyze the given frame by using Kani's method.

EI Constant

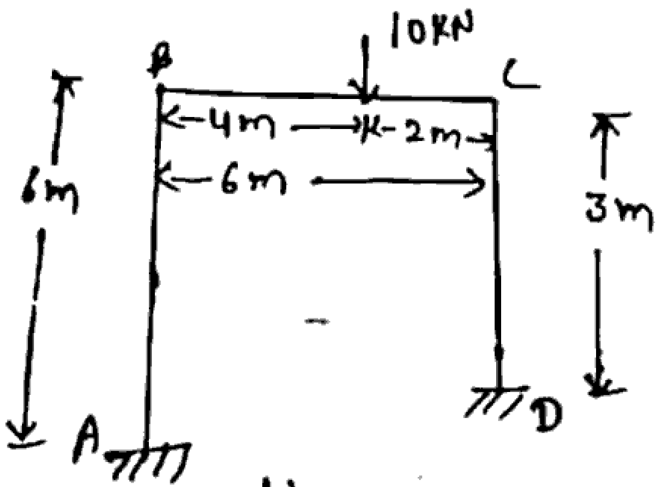

fig [9]

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UNIT - V

5 Using cantilever method, analyze the frame shown in fig. (10) below. Assume that all columns have equal area of cross-section.

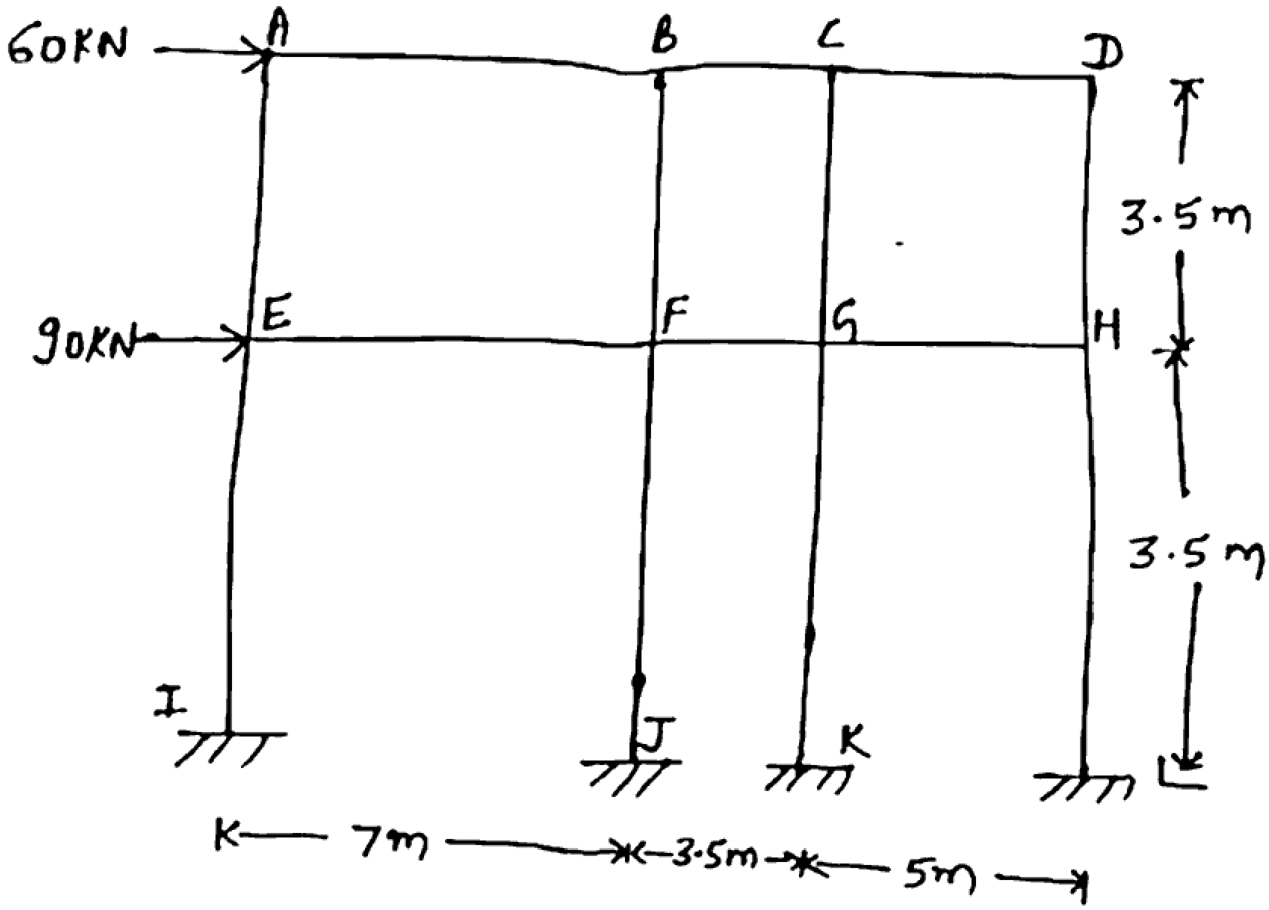

Fig. [10]

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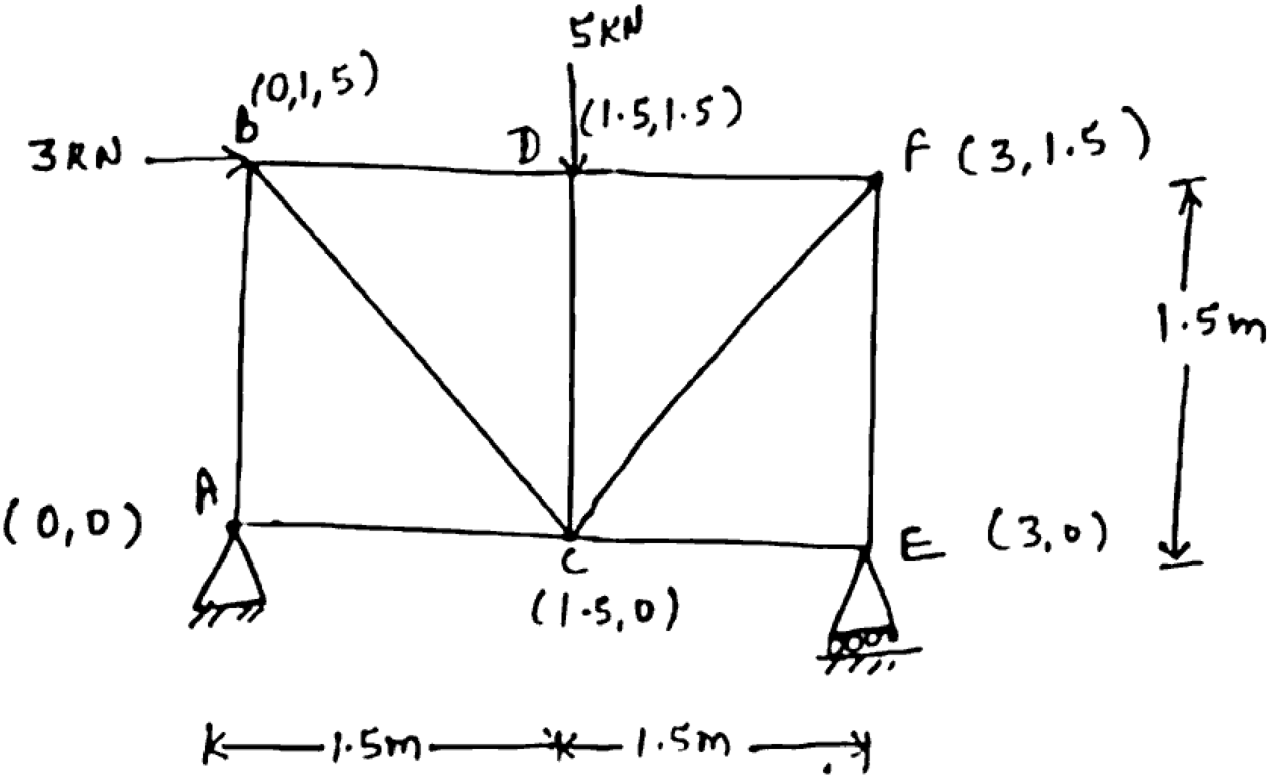
OR

5 Determine the forces in the members of the pin jointed truss (using tension coefficient method).



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