
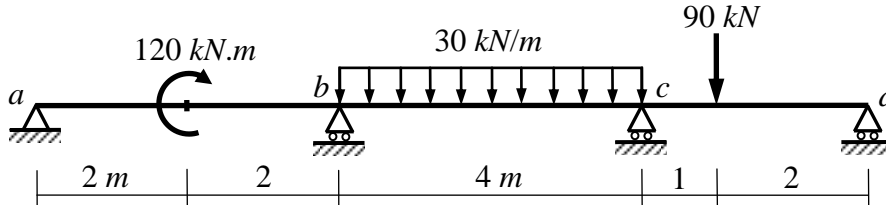


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|--|--|---------------------------|
|  | Ministry of Higher Education           | Academic Year : 2016/2017 |
|  | Giza Higher Institute for Eng. & Tech. | Semester : Second         |
|  | Civil Engineering Department           | Level : 3 <sup>rd</sup>   |
|  | Course Name: Theory of Structures (4)  | Time : 3 Hours            |
|  | Course Code : CIV 302                  | Date : 29 / 5 / 2017      |
| <b>Final Term Exam</b>   |  |                           |
| Total Marks: 60  |  | No. of Questions: 4       |

**Question (1): (15 Marks)**

For the shown statically indeterminate continuous beam, using the three-moment equation, draw the shear force and bending moment diagrams due to the applied loads.



**Question (2): (15 Marks)**

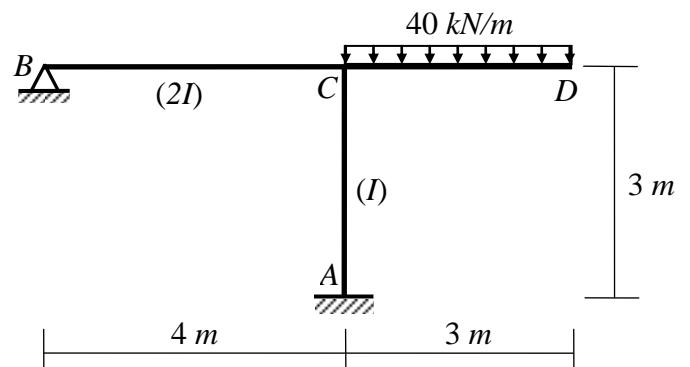
For the shown loaded frame with variable moment of inertia, using the virtual work method:

- (a) Find the reactions at the supports A and B.
- (b) Draw the bending moment diagram.

The relative moments of inertia are given between brackets and  $E$  is constant.

**Note:**

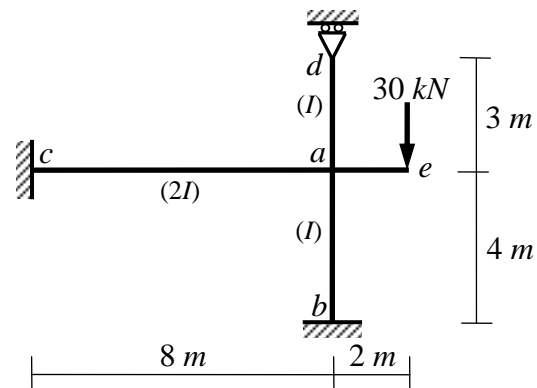
Take the main system by removing the support B.



**Question (3): (15 Marks)**

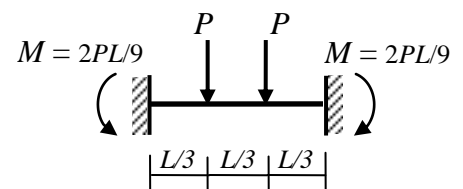
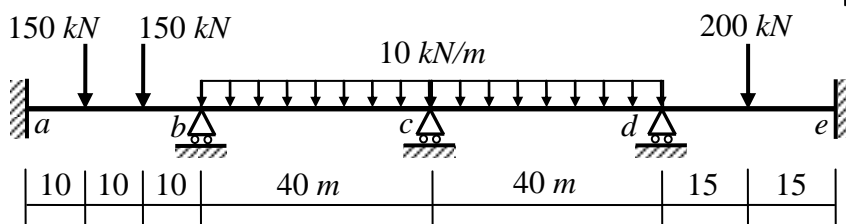
For the shown loaded frame, using the slope deflection method, draw the bending moment diagram.

Note that  $E$  is constant and the relative moments of inertia are given between brackets.



**Question (4): (15 Marks)**

Using the moment distribution method, draw the bending moment diagram for the shown statically indeterminate continuous beam due to the applied loads. Assume that  $EI$  is constant.



With my best wishes

Dr. M. Abdel-Kader