Ministry of Higher Education
Giza Higher Institute for Eng. & Tech.
Civil Engineering Department
Course Name: **Theory of Structures (4)**
Course Code : **CIV 302** Date : **9 / 5 / 2018**

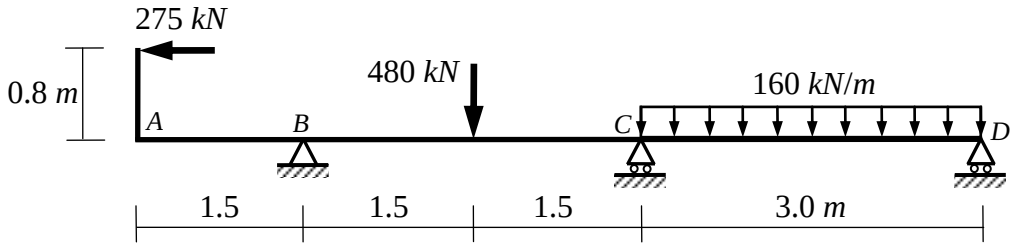
Academic Year : **2017/2018**
Semester : **Second**
Level : **3rd**
Time : **3 Hours**
Examiner: ***Dr. M. Abdel-Kader***

Final Term Exam

Total Marks: **60** No. of Questions: **5** (Attempt all questions)

Question (1): (12 Marks)

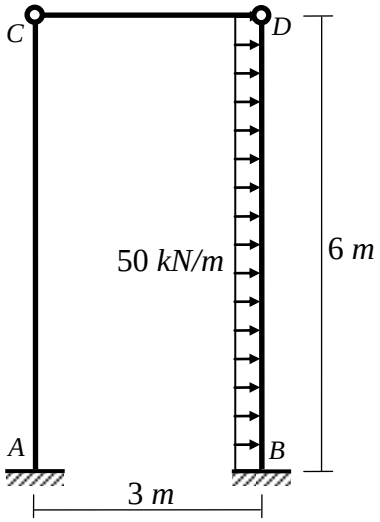
For the shown beam, **using the three-moment equation**, draw the **S.F.D** and **B.M.D** due to the applied loads.



Question (2): (12 Marks)

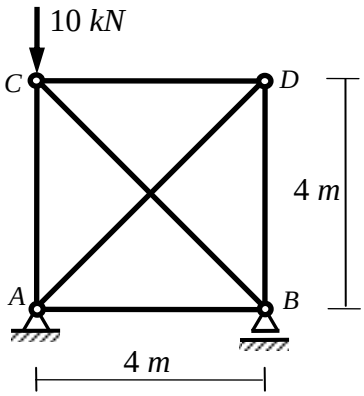
For the shown frame, **using the consistent deformations** (**virtual work**) **method**, draw the bending moment diagram.

Note:
Take the main system by replacing the fixed support at *A* by a hinged support.



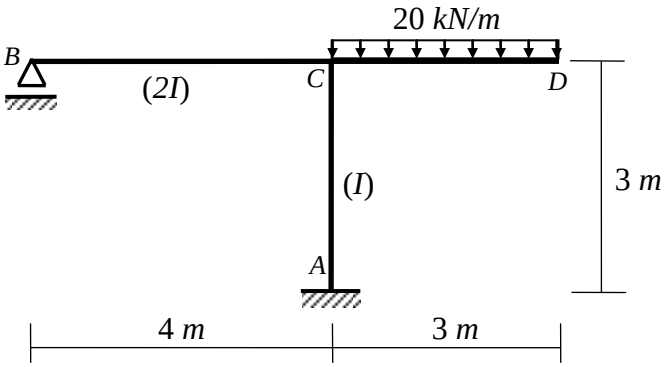
Question (3): (12 Marks)

For the shown truss, **using the consistent deformation (virtual work) method**, determine the forces in all members of the truss. Assume $EA = 1$ *kN* for all members.



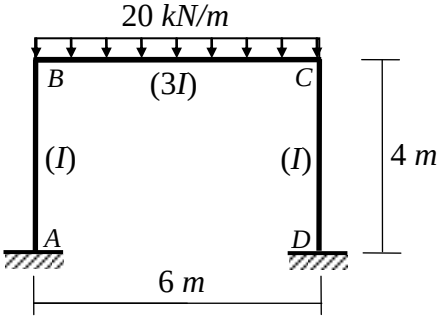
Question (4): (12 Marks)

For the shown frame with variable moment of inertia, **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 (5): (12 Marks)

Using the moment distribution method, draw the bending moment diagram for the shown loaded frame with variable moment of inertia. Note that *E* is constant and the relative moments of inertia are given between brackets.



With my best wishes
Dr. M. Abdel-Kader