	Ministry of Higher Education	Academic Year : **2015–2016**
	Giza Higher Institute for Eng. & Tech.	Semester : **Second**
	Civil Engineering Department	Level : **3rd**
	Course Name: **Theory of Structures (4)**	Time : **3 Hours**
	Course Code : **CIV 302**	Date : **4 / 6 / 2016**
		Examiner: **Dr. M. Abdel-Kader**

Second Semester Final Exam

- Attempt all questions.   - The Exam consists of **5** questions in **1** page.   - Maximum grade is **60 Marks**.

Question (1): **(12 Marks)**

For the statically indeterminate continuous beam shown in **Fig.1**, **using the three-moment equation**:
  (a) Draw the bending moment diagram due to the applied loads.
  (b) Calculate the percentage increase in the moment at fixed support a due to settlement of support b by an amount of 10 mm. $EI = 37333\ kN.m^2$
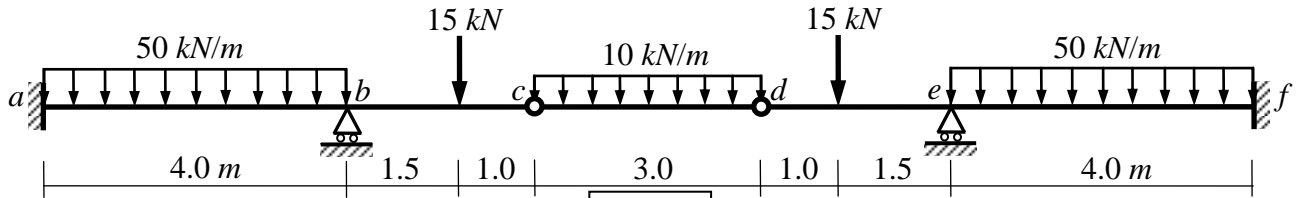

Fig. 1

Question (2): **(12 Marks)**

For the loaded frame shown in **Fig. 2**, **using the consistent deformation (virtual work) method**, draw the **B.M.D**.
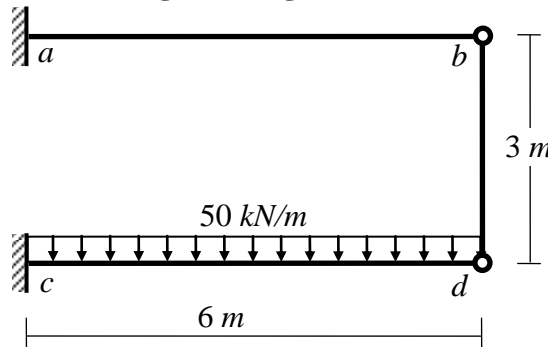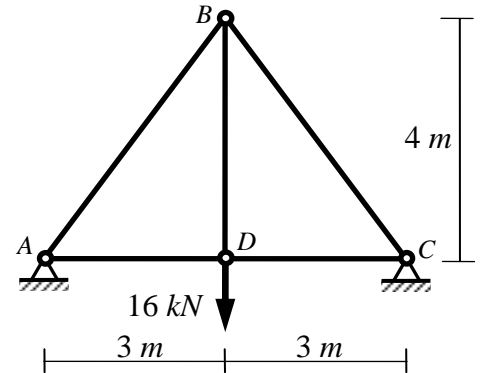

Fig. 2

Fig. 3

Question (3): **(12 Marks)**

For the loaded truss shown in **Fig. 3**, **using the consistent deformation (virtual work) method**, determine the vertical and horizontal reactions at A and C due to the applied load. Assume $EA = 1\ kN$ for all members.

Question (4): **(12 Marks)**

For the loaded frame shown in **Fig. 4**, **using the slope deflection method**, draw the **B.M.D**. Note that E is constant and the relative moments of inertia are given between brackets on **Fig. 4**.

Question (5): **(12 Marks)**

Using the moment distribution method, draw the **B.M.D**. for the loaded frame shown in **Fig. 5**. Note that E is constant and the relative moments of inertia are given between brackets on **Fig. 5**.
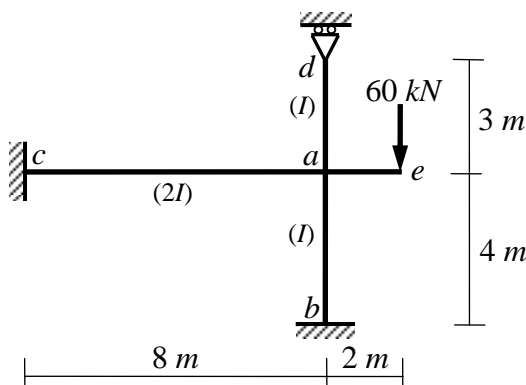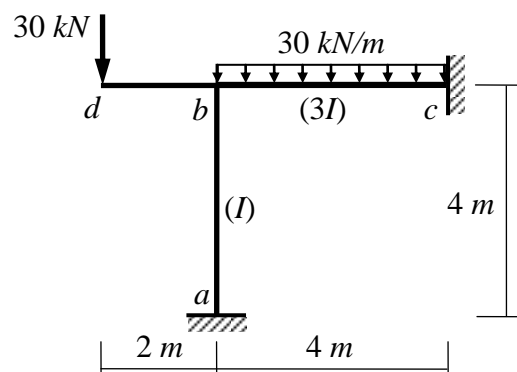

Fig. 4

Fig. 5

With my best wishes
Dr. M. Abdel-Kader