

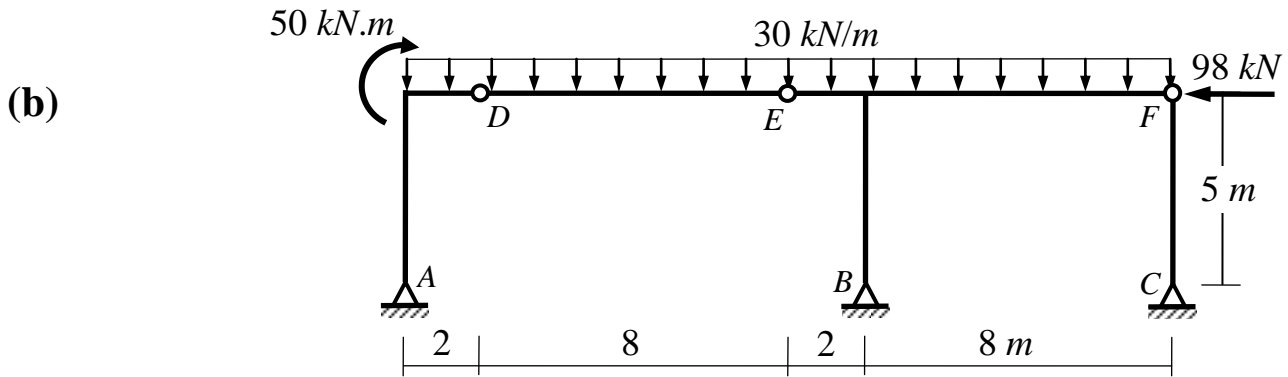
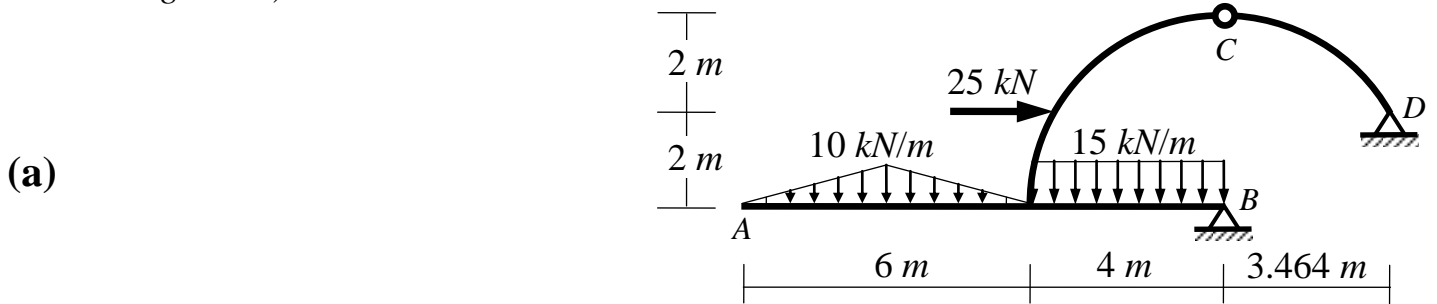
**First Semester Final Exam**

- Attempt all questions.
- The Exam consists of **3** questions in **2** pages.
- Maximum grade is **60 Marks**.

**Question (1): (20 Marks)**

For the shown structures, determine the reactions at the supports.

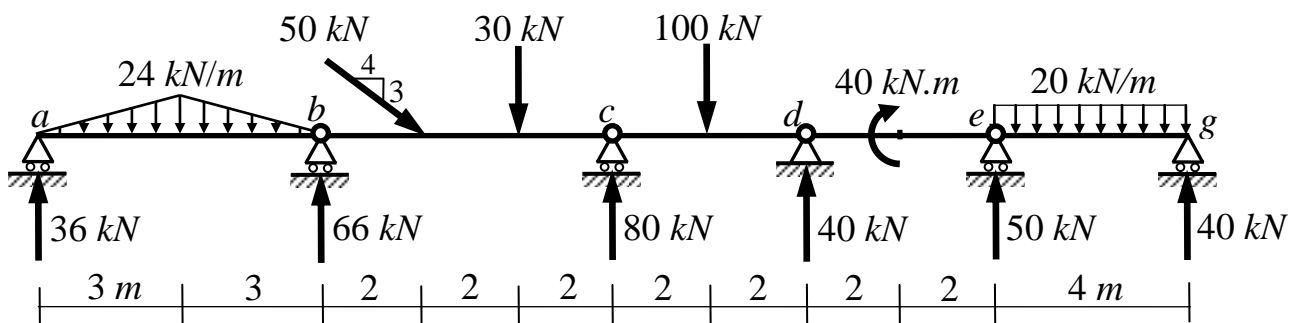
**Note:** In your answer sheet (in the first page), draw the final reactions (direction and magnitude) on the structures.



**Question (2): (20 Marks)**

(a) For the shown beam, draw (in the second page of your answer sheet) the normal force, shear force and bending moment diagrams.

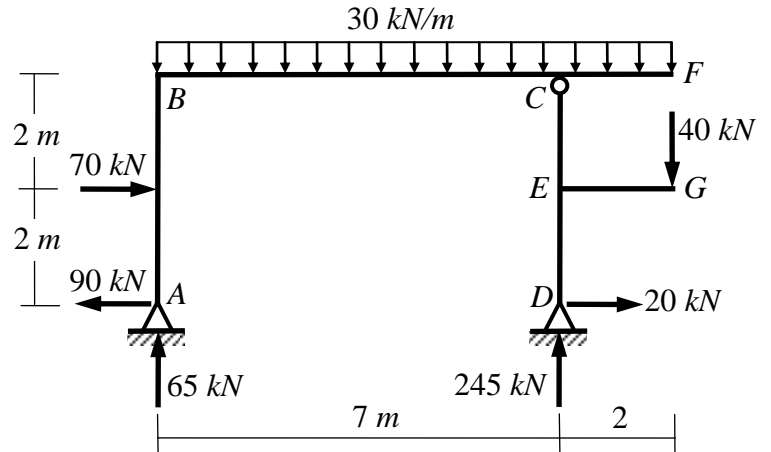
**Note:** Only the vertical reactions are given.



**Please turn over**

(b) For the shown frame, draw (in the third page of your answer sheet) the normal force, shear force and bending moment diagrams.

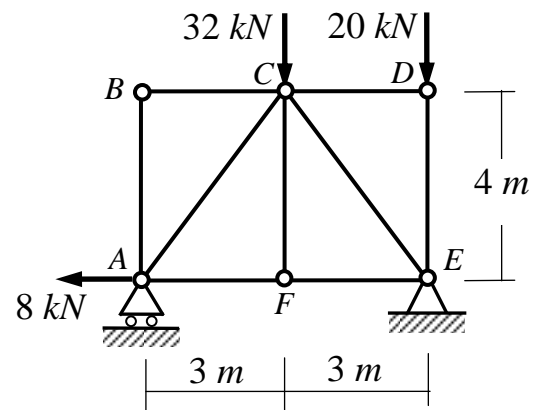
**Note:** The reactions are given.



**Question (3): (20 Marks)**

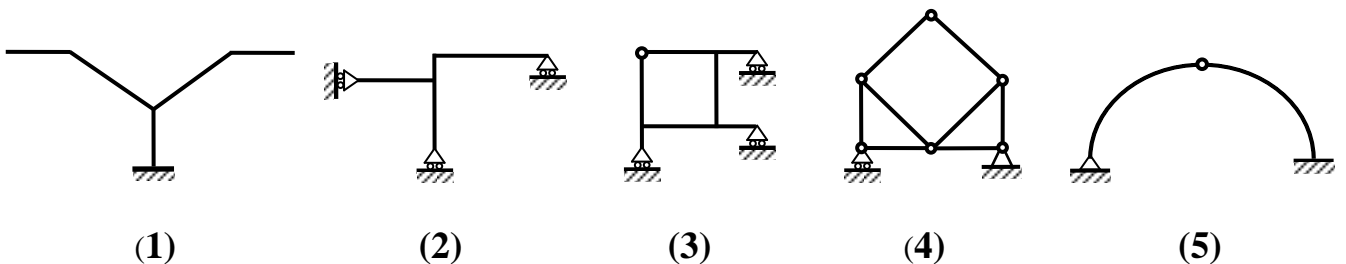
(a) For the shown truss:

- (i) Determine the reactions at the supports *A* and *E*.
- (ii) Using the method of joints, determine the forces in all truss members.
- (iii) Using the method of sections, determine the force in member *CE*.



**Note:** In your answer sheet (in the last page), draw the truss and put the force magnitude and the indication (Tension or Compression) on each member.

(b) Determine whether each of the shown structures is stable or unstable. If stable, determine whether it is statically determinate or indeterminate. If statically indeterminate, determine the degree of indeterminacy.



With my best wishes  
**Dr. M. Abdel-Kader**