

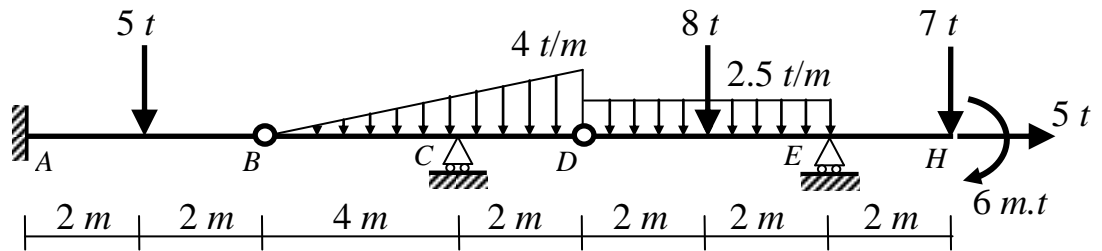
**First Semester Final Exam**

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

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

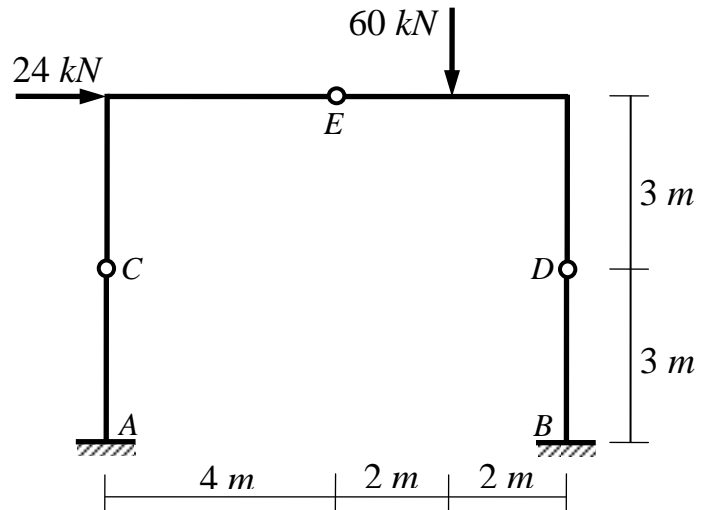
(a) For the shown beam, determine the reactions at the supports A, C and E.

**Note:** In your answer sheet, draw the final reactions (direction and magnitude) on the beam.



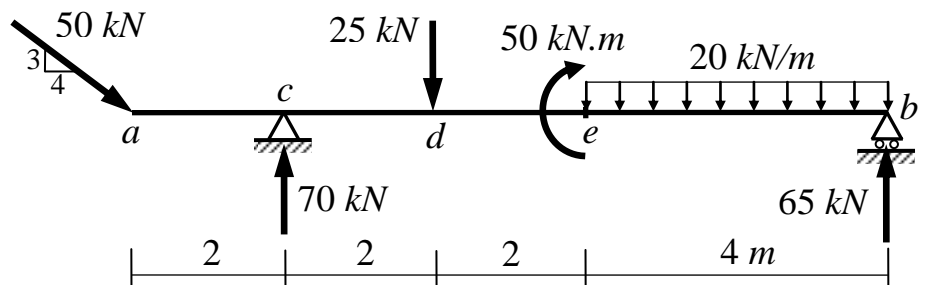
(b) For the shown frame, determine the reactions at the supports A and B.

**Note:** In your answer sheet, draw the final reactions (direction and magnitude) on the frame.



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

(a) For the shown beam, draw the normal force, shear force and bending moment diagrams.

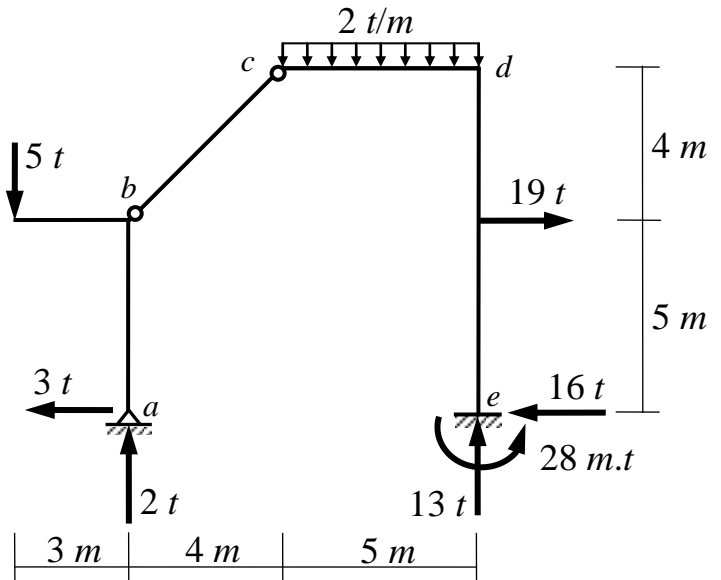


**Note:** Only the vertical reactions are given.

**Please turn over**

(b) For the shown frame, draw the normal force, shear force and bending moment diagrams.

Note: The reactions are given.

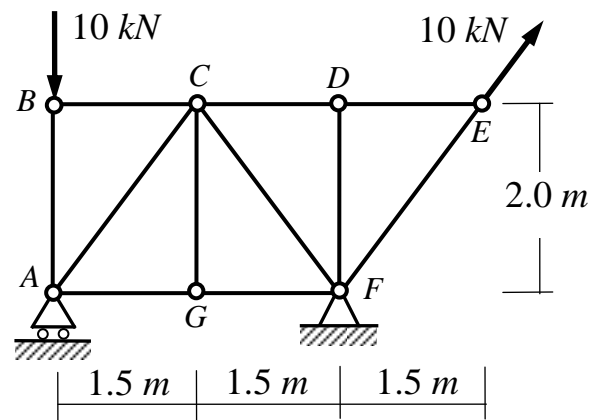


**Question (3): (20 Marks)**

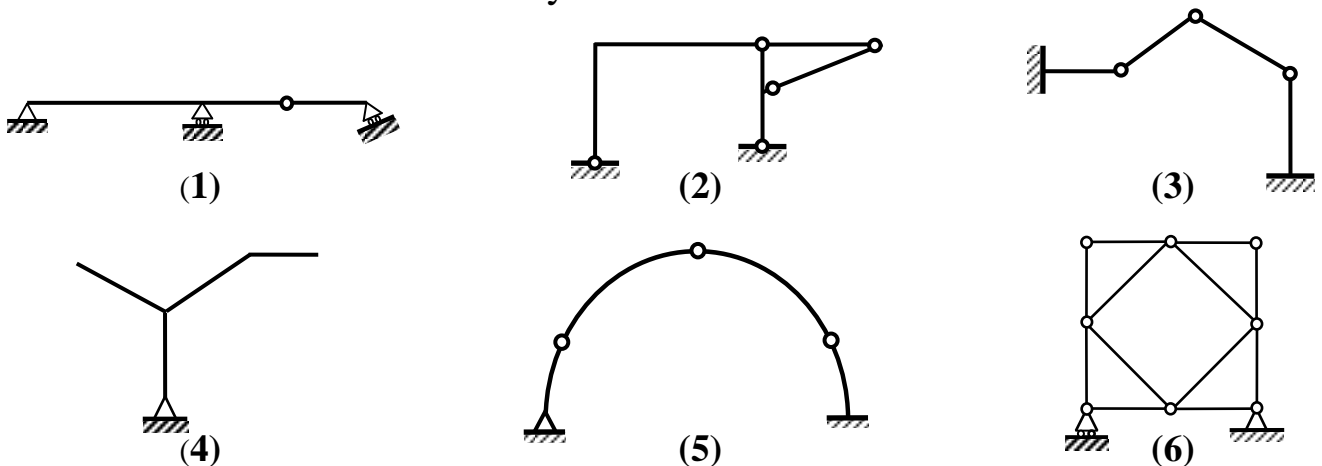
(a) For the shown truss:

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

Note: In your answer sheet, 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.



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