Final Exam

Total Marks: **90**   No. of Questions:**3** (Attempt all questions)

Question (1): (30 Marks)

For the structures shown in **Fig. 1**, determine the reactions at the supports.

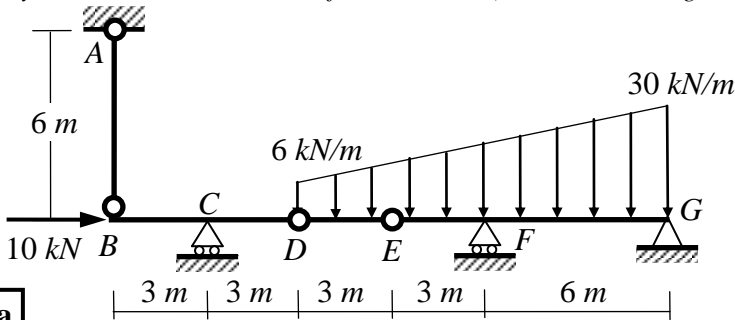*Note: In your answer sheet, draw the final reactions (direction and magnitude) on the structures.*
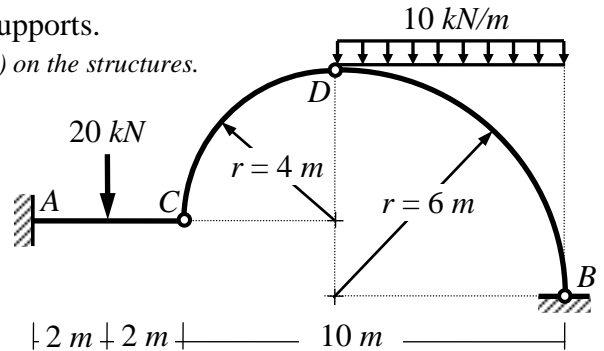

Fig. 1a

Fig. 1b

Question (2): (30 Marks)

For the beam and frame shown in **Fig. 2**, draw the normal force, shear force and bending moment diagrams.

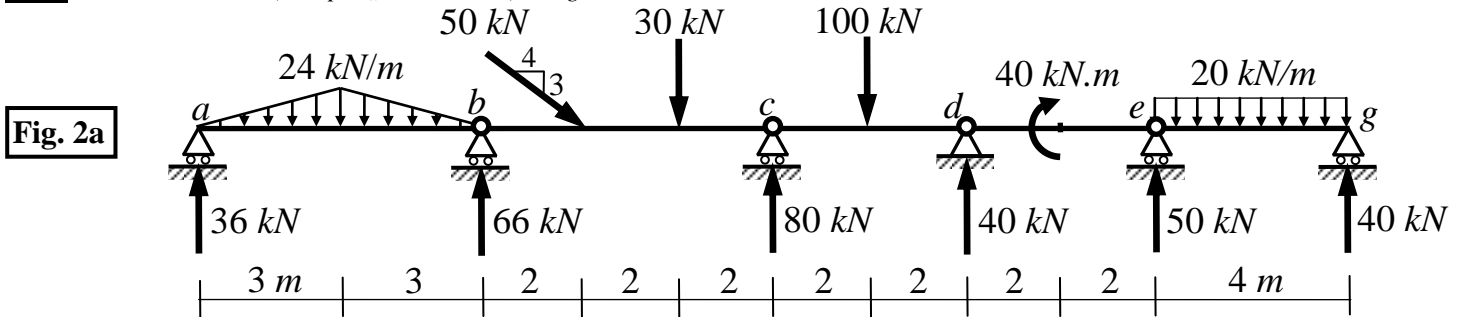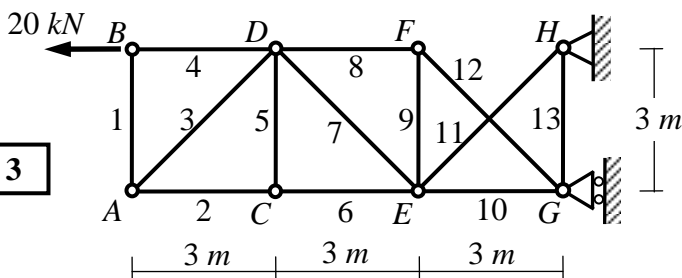*Note: All the reactions (except d_x in the beam) are given.*
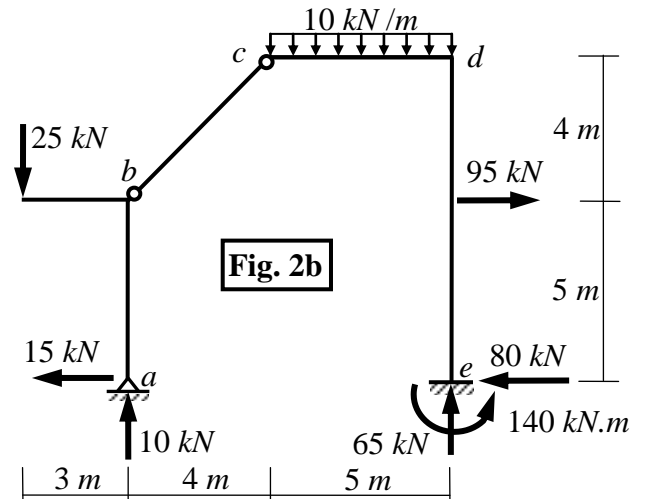

Fig. 2a

Fig. 3

Fig. 2b

Question (3): (30 Marks)

(a) For the loaded truss shown above in **Fig. 3**:
  (i) Determine the reactions at the supports.
  (ii) Using the **method of joints**, determine the forces in all truss members.
  (iii) Using the **method of sections**, determine the forces in members *DE and FG* (members 7 and 12).

Note: In your answer sheet, draw the truss and put the force magnitude and the indication (T or C) 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.

(**1**)   (**2**)   (**3**)   (**4**)   (**5**)
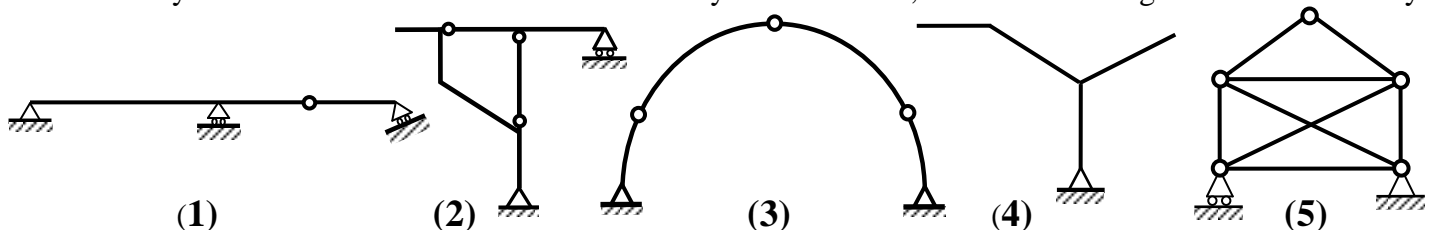
With my best wishes

Dr. M. Abdel-Kader