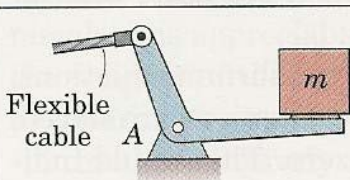
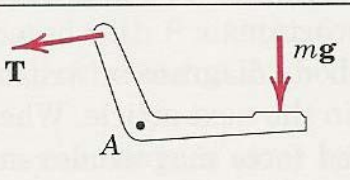
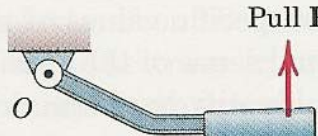
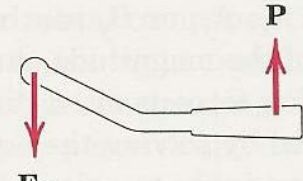
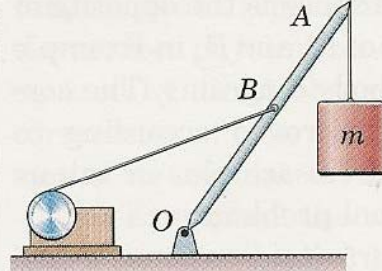
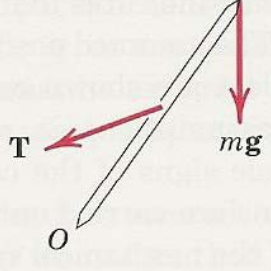
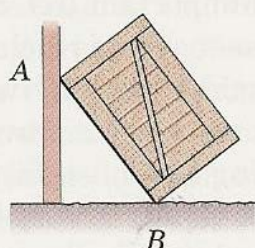
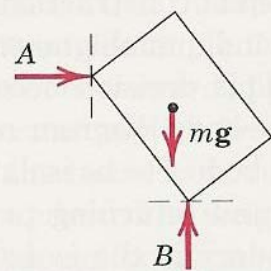
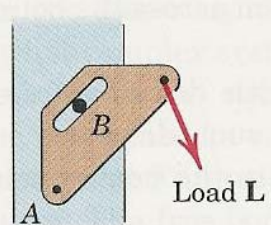
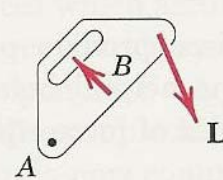


Name (in Arabic) :
 Student No.:
 Instructor :

Q. No.	Marks
1	
2	
3	
Total	

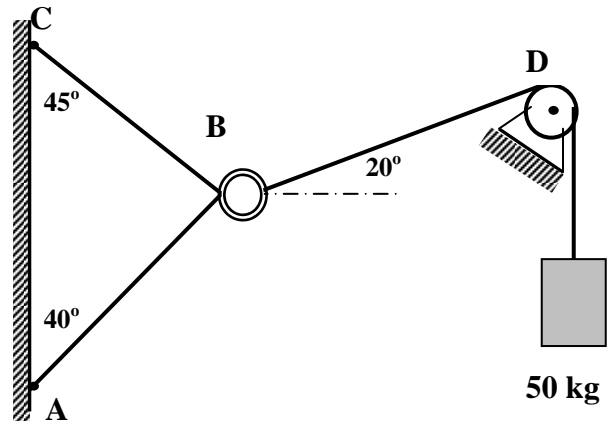
Q1 a (5 points)

In each of the following examples, the body to be isolated is shown in the left-hand diagram, and an incomplete free-body diagram (FBD) of the isolated body is shown on the right. **Add whatever forces are necessary in each case to form a complete free-body diagram.** The weights of the bodies are negligible unless otherwise indicated.

	Body	Incomplete FBD
1. Bell crank supporting mass m with pin support at A .		
2. Control lever applying torque to shaft at O .		
3. Boom OA , of negligible mass compared with mass m . Boom hinged at O and supported by hoisting cable at B .		
4. Uniform crate of mass m leaning against smooth vertical wall and supported on a rough horizontal surface.		
5. Loaded bracket supported by pin connection at A and fixed pin in smooth slot at B .		

Q1 b (5 points)

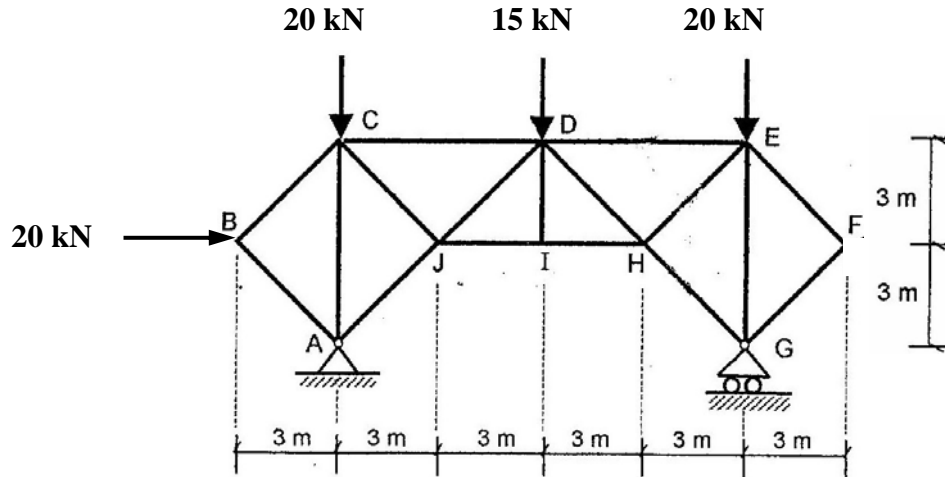
Three cables are joined at the junction ring B.
Determine the **tensions in cables AB and BC**
caused by the weight of the 50 kg cylinder.



Q2 (10 points)

For the truss shown in the figure:

- Determine the **support reactions**
- Identify the **zero-force members**
- Compute the force in members **ED** and **EH** using the method of section (specify whether member is in *Tension* or *Compression*)



Q3 (10 points)

For the frame shown in the figure:

Compute the forces in all members.

