*University of Baghdad*
*College of Engineering*
*Civil Engineering Department*

*First Year Class*
*Date: 9 June 2013*
*Time: 135 minutes*

*Engineering Mechanics (Statics)*

*First Attempt*

*NOTE: ATTEMPT FOUR QUESTIONS ONLY*

**Q1)** Determine the forces in member **IL** of the pin connected plane truss shown in Fig. (1).

**Q2)** In the coplanar force system of Fig. (2), find the resultant and its direction then locate it with respect to point D.

**Q3)** The cylinder of Fig. (3) weighs **100 N** and the block weighs **150 N**. The coefficient of friction between the cylinder and the surface is **0.2**, while the coefficient of friction between the block and the surface is **0.3**. Determine the force (**P**) that will cause cylinder to have impending motion.

**Q4)** For the pin connected frame shown in Fig. (4), determine the horizontal and vertical pin forces at **C** on member **BCD**.

**Q5)** Determine the coordinates of the centroid of the shaded area of Fig. (5), then Find $I_x$ & $I_y$.

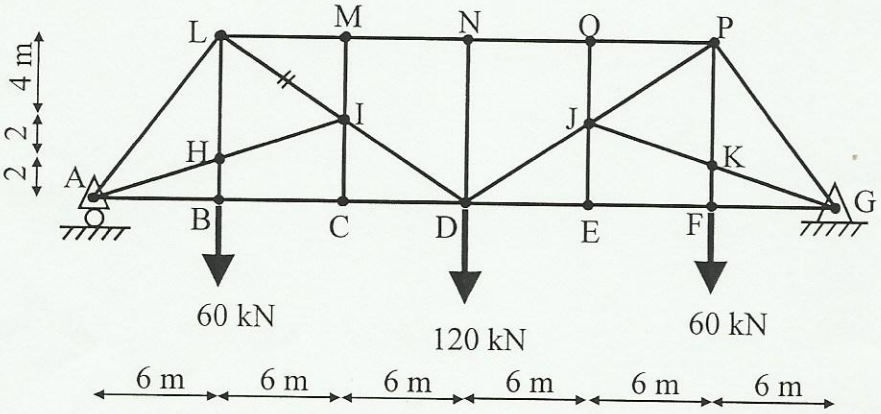


**Fig. (1)**

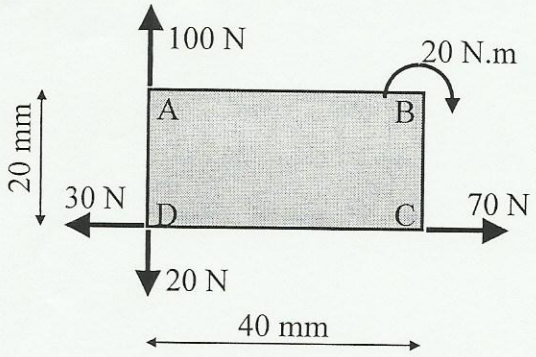


**Fig. (2)**

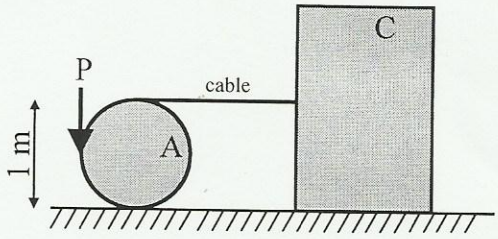


**Fig. (3)**

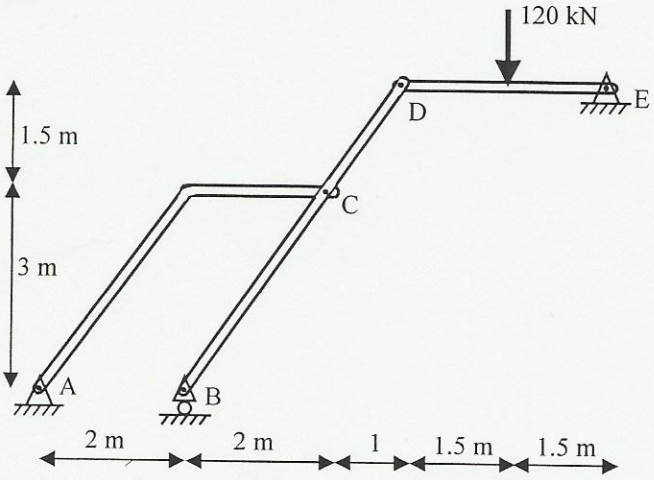


**Fig. (4)**

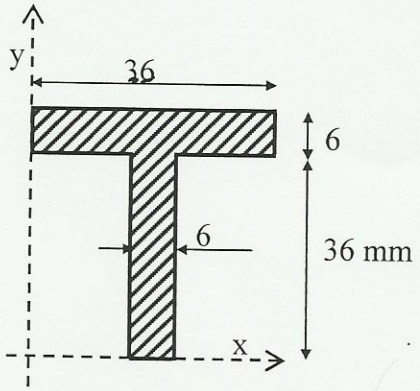


**Fig. (5)**