



Alexandria Higher Institute of Engineering & Technology (AIET)

Department of: General	Preparatory Year	0 th Year
ME001	Mechanics I	Final, Jan., 17, 2012
Examiners:	Dr. Sayed Hassan and Dr. Rola Afify	Time: 3 hours

Answer the following questions:

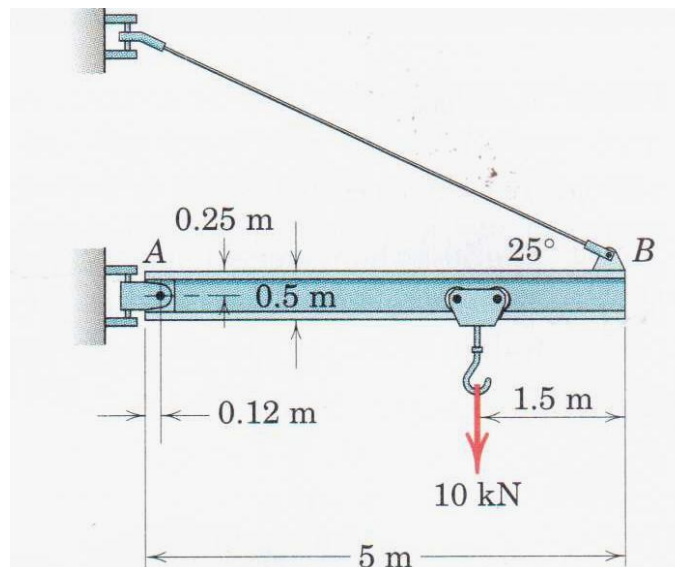
Question one: (12 marks)

Determine the force P required to maintain the 200-kg engine in the position shown for which $\theta = 30^\circ$. The diameter of the pulley at B is negligible.



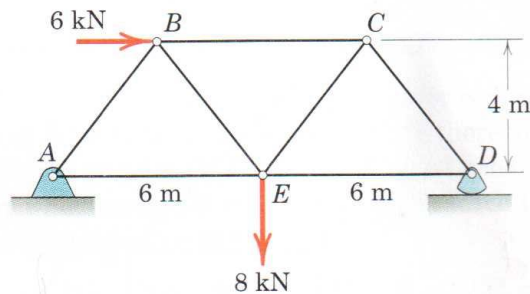
Question Two: (12 marks)

Determine the magnitude of T of the tension in the supporting cable and the magnitude of the force on the pin A for the jib crane shown. The beam AB has a thickness of 0.5 m with a mass of 475-kg.



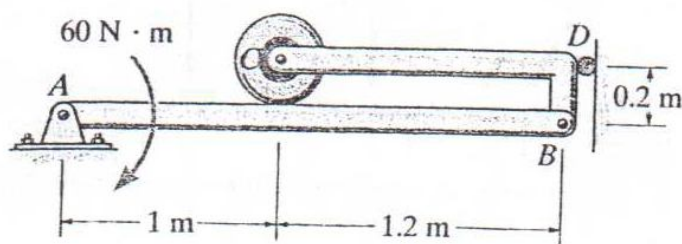
Question Three: (12 marks)

Calculate the force in each member of the loaded truss. Specify whether the members are in tension or in compression.



Question Four: (12 marks)

Determine the force that the small roller C exerts on beam AB. Also, what are the horizontal and vertical components of reaction at pin A? Neglect the weight of the frame and roller.



Question Five: (12 marks)

Determine the value of the mass m_0 so that the 100-kg block will start moving up the inclined plane. The coefficient of static friction for the contact surfaces is 0.3.

