Department of Mechanical Engineering (NITC)

S1ME **ZZ1001D ENGINEERING MECHANICS** **Tutorial Test 4-Set 5**

Time: One Hour Maximum Marks: 20

1. Find the supporting force systems at *A* and *B* (Fig. 1). The length of *CB* is 8 m.
2. Find the supporting force and couple-moment system for the cantilever beam (Fig. 2). What is the force and couple-moment system transmitted through a cross section of the beam at *B*?

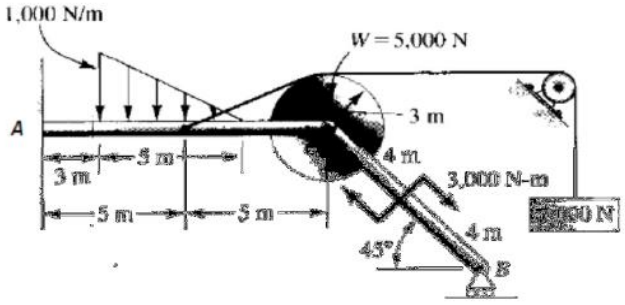

Figure 1

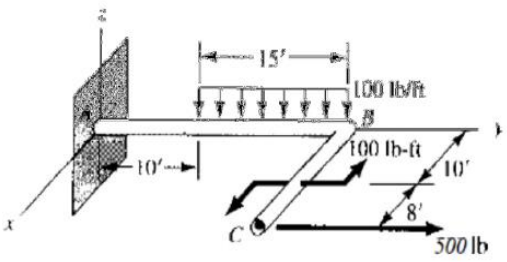

figure 2

----------**P.T.O**----------

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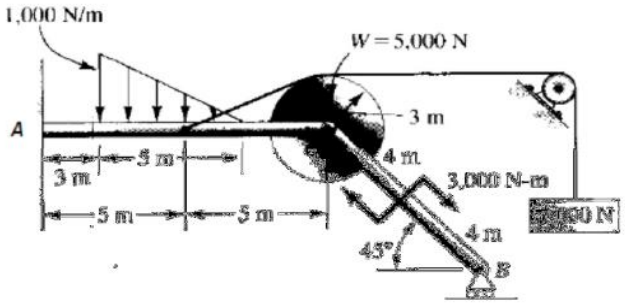

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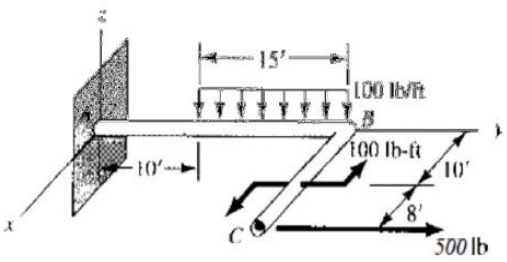


figure 2

----------**P.T.O**----------

3. Determine the magnitude and direction ɵ of the minimum force *P* needed to pull the 50-kg roller over the smooth step (Fig. 3).
4. Draw the free-body diagram of member *AB*, which is supported by a roller at *A* and a pin at *B*. Explain the significance of each force on the diagram. (See Fig. 4.)

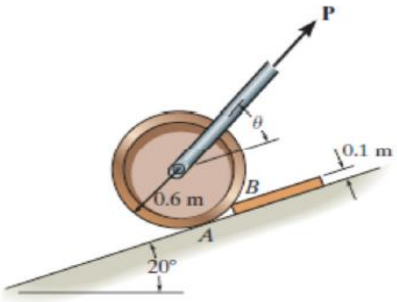
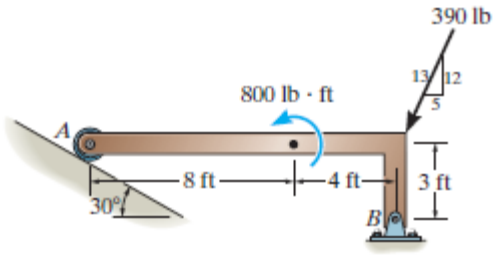


Figure 3



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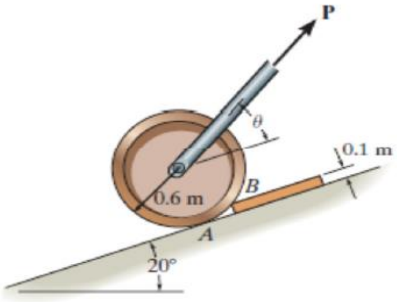

Figure 3

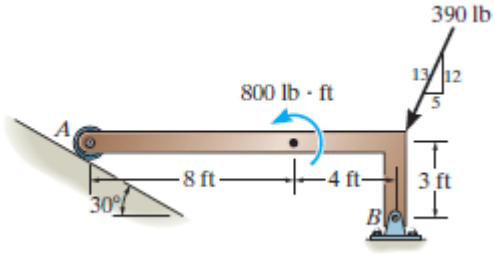

figure 4