

MEEG 2003

Name: _____
(Underline your last name.)

Test II ()

ID#: _____

1. (30%) A beam ABC carries a distributed load of intensity w kN/m and a moment $M_A = 3$ kN·m \curvearrowright at the left end A as shown in Fig. P1. Determine (a) the magnitude W of the total distributed load, (b) the reaction force F_C at the roller support C , (c) the reaction force B at the hinge support B .

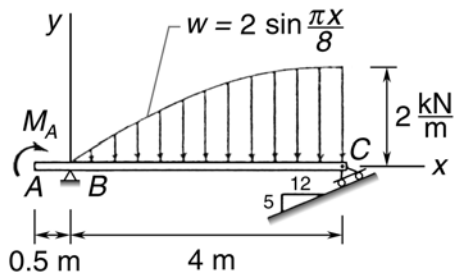


Fig. P1

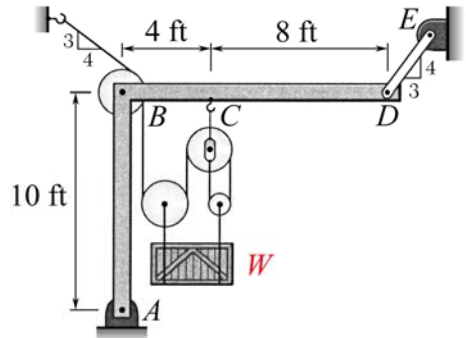


Fig. P2

2. (30%) A load of weight W is supported by cables and pulleys that are mounted on the frame $ABCD$ as shown in Fig. P2. If the load causes the short link DE to develop a tension of 200 lb, determine (a) the value of W , (b) the reaction force A at the hinge support A .

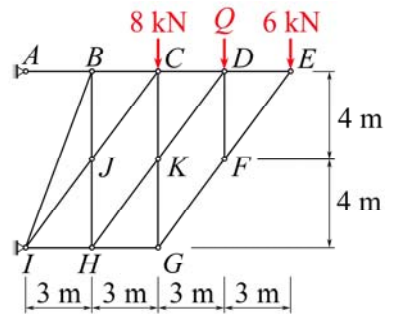


Fig. P3a

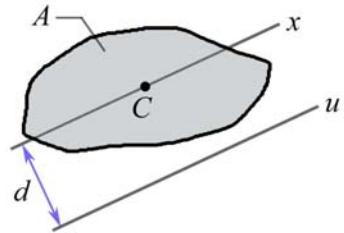


Fig. P3b

3. A compound truss carrying loads is shown in Fig. P3a, where $Q = 8.2$ kN. Circle on this test sheet the correct or nearest item for each of the following:

- A. (5%) The magnitude of the axial force in member CD is
(a) 10.65 kN. (b) 10.8 kN. (c) 10.95 kN. (d) 11.1 kN. (e) 11.25 kN. (f) 11.4 kN. (g) 11.55 kN.
- B. (5%) The magnitude of the axial force in member BC is
(a) 21.9 kN. (b) 21.75 kN. (c) 21.6 kN. (d) 21.45 kN. (e) 21.3 kN. (f) 21.15 kN. (g) 21 kN.
- C. (5%) The magnitude of the axial force in member BI is
(a) 8.54 kN. (b) 8.76 kN. (c) 8.97 kN. (d) 9.18 kN. (e) 9.40 kN. (f) 9.61 kN. (g) 9.83 kN.
- D. (5%) A shaded area with centroid at C is shown in Fig. P3b, where $A = 10$ m², $I_u = 25$ m⁴, and $d = 0.5$ m between the two parallel axes x and u . The value of I_x for this area is
(a) 22.5 m⁴. (b) 23.4 m⁴. (c) 24.1 m⁴. (d) 24.6 m⁴. (e) 25.4 m⁴. (f) 25.9 m⁴. (g) 26.6 m⁴. (h) 27.5 m⁴.

4. (20%) Non-numerical problem.