AE 670 Aerospace Structural Analysis-I

Assignment No. 3

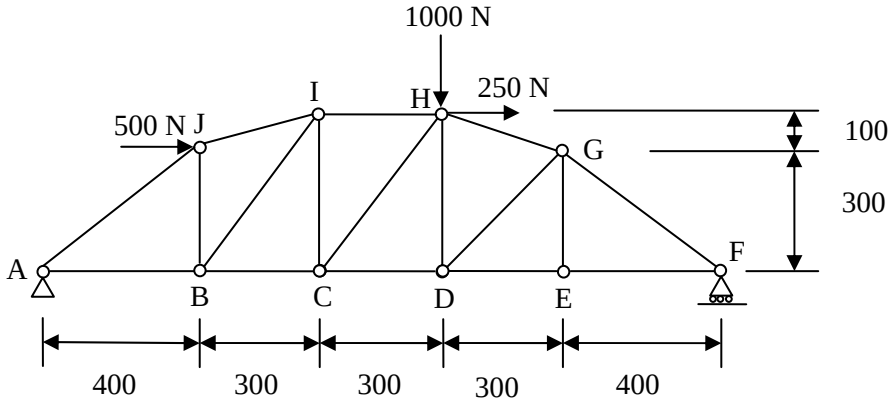
3.1 Using the method of joints find the forces in all members for the trusses shown in figure 3.1 (a) through (e).

3.2 For the figure 3.1(a) verify the forces in members JI, BI, BC, HG, DG and DE by the method of sections.

3.3 For the figure 3.2(a) shown use the method of tension coefficient to compute the forces in the wires.

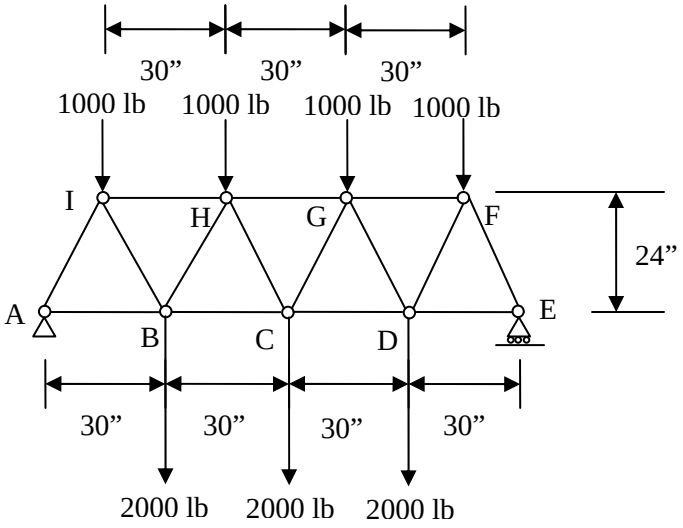
3.4 Using the tension-coefficient method, determine the forces in members OB, OC and AB of the pin jointed space frame shown in figure 3.2(b). The frame is resting on a spherical seating at C which is capable of exerting only vertical reaction. Roller supports are provided at A, B and D which permit the movement along *x*, *y* and *x* directions, respectively. **Note**: You can use the computer to inverse the resulting matrix.

Figure 3.1

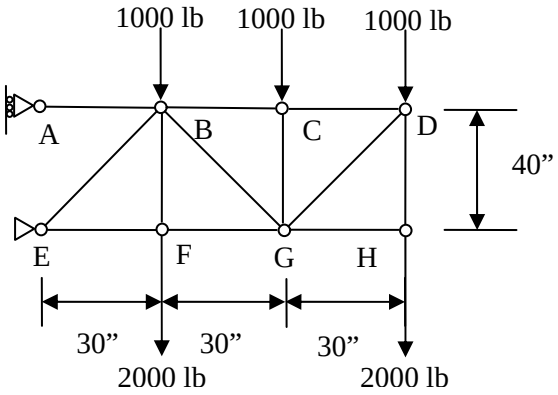


All dimensions are in mm

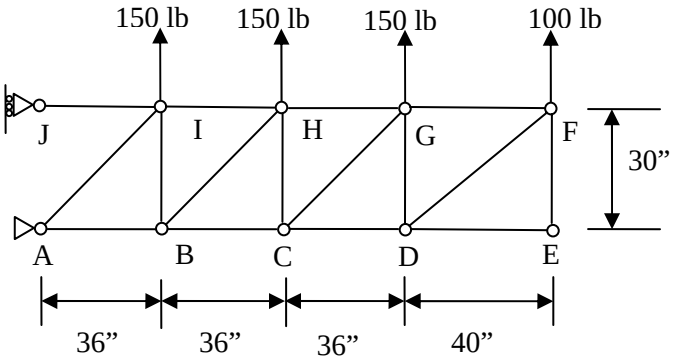
(a)


30”
30”
30”
1000 lb
1000 lb
1000 lb
1000 lb
I
H
G
F
24”
A
B
C
D
E
30”
30”
30”
30”
2000 lb
2000 lb
2000 lb

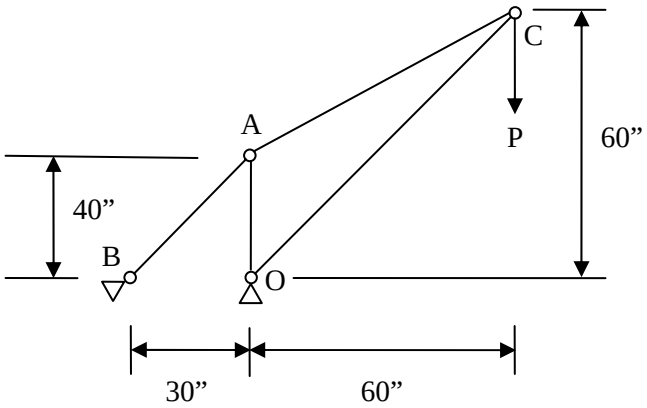
(b)


1000 lb
1000 lb
1000 lb
A
B
C
D
40”
E
F
G
H
30”
30”
30”
2000 lb
2000 lb

(c)

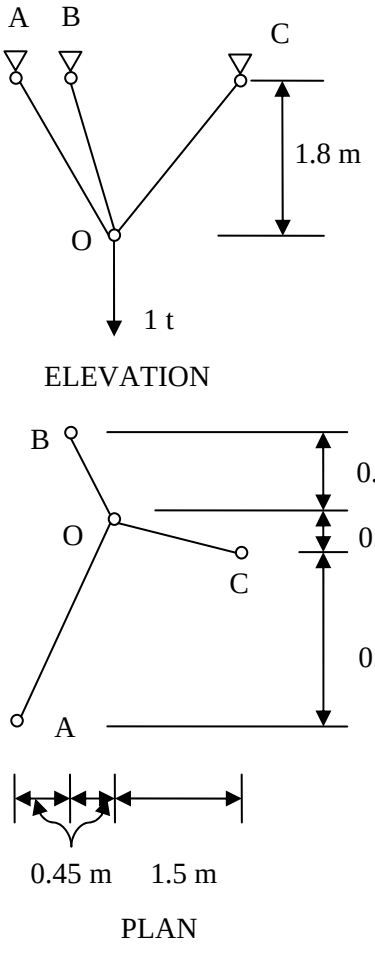

150 lb
150 lb
150 lb
100 lb
J
I
H
G
F
30”
A
B
C
D
E
36”
36”
36”
40”

(d)

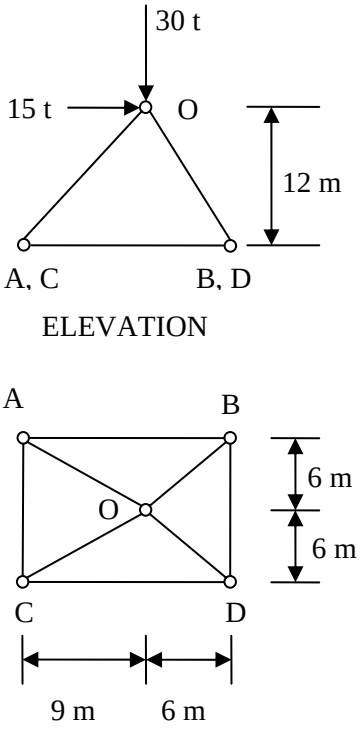


(e)

Figure 3.2



(a)



(b)