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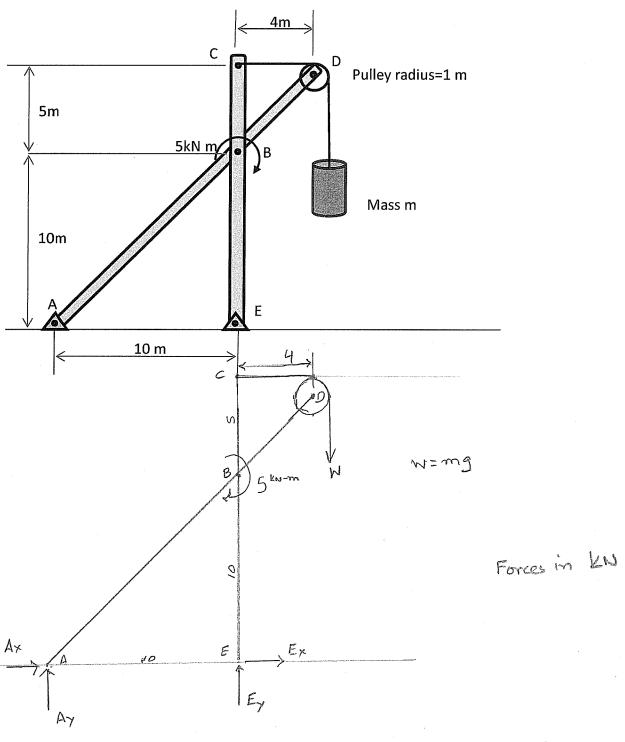
ENG 1440 Introduction to Statics

March 13, 2013

Term Test # 2 Time: 6:00 pm - 7:30 pm

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$$A_y + E_y = W$$
 3
 $E_y = \frac{5 + 15W}{10} = 0.5 + 1.5W$ 3
 $A_y = -(0.5 + 0.5W)$

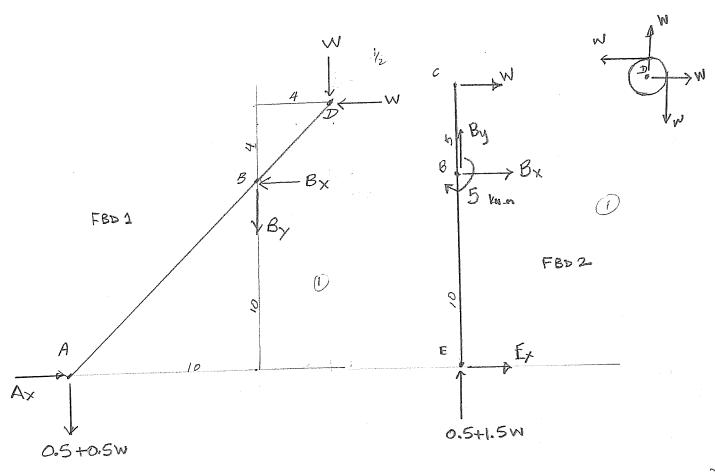
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$$\begin{bmatrix} \Sigma F_{x}=0 \end{bmatrix} \quad A_{x}-B_{x}-W=0$$

$$A_{x}-B_{x}=W$$
(4)

$$[\Sigma F_{y=0}]$$
 - $(0.5 + 0.5W) - B_{y} - W = 0$
 $B_{y=-0.5-1.5W}$ (5)

$$[IM_{B=0}] 10Ax + 10(0.5+0.5w) + 4w-4w=0$$

$$Ax = -0.5 - 0.5w (6)$$

(Forces in KN)

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Force on pin at B.

Max. capacity = 20000 N = 20 KN

W= 9.095 KN

$$M = \frac{y}{9} = \frac{9095}{9.5} = 928 \text{ kg}$$

Check accuracy of forces at B.

From Eq. 1 Ax= -Ex 1. Ex = - (-0.5-0.5W) = 0-5+0.5W

From FBD (2)

$$(2)$$
.
 $ZF_{X}=W+B_{X}+E_{X}=W-0.5-1.5W+0.5+0.5W=0$ V
 $ZF_{3}=B_{3}+0.5+1.5W=-0.5-1.5W+0.5+1.5W=0$ V

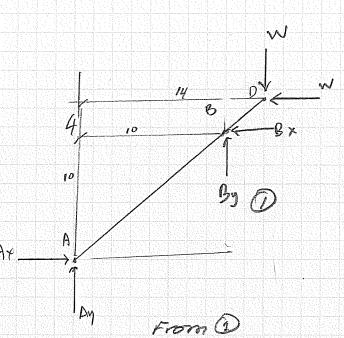
COURSE

SECTION DATE

PROBLEM

SHEET

Alternate Solution



(ZMB=0) - 10Ay+10Ax-4W+4W=0

(1)

- AX-BX = AY+BY

Since Ax=Ay , Bx = -By

from @ (EM_=0) -5000-10 Bx -15N =0

 $B_{\times} = -\frac{5000 - 15W}{10}$

_ 500 - 1.5W

B= \ Bx2+By2 = 1Bx1/2 = (SOO+1.5W)/2 = 20000

W= 9095 N

m = 928 kg

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COURSE	DATE PROBLEM	SHEET OF
(FBD2)		
그들은 그는 글로 내용 보를 다른 사람들을 만든 그렇게 했다.	5-15W=0	
고겠다면 가득하다 말을 느리가 되는 사람들이 다 모든 사람이다.	5-15W	
보내는 물 이렇게 들었는데 그들은 말을 하는 것 같아.	그들은 물로 얼마 얼마나를 들어 시겠다 됐다. 얼마 뭐 되면 하다면 그렇다.	
	-0.5 -1.5W	
(ZFy=0) 0.5+	1.5W + By = 0	
Bn=	-0.5-1.5W	
7 0		
$B_{\times} = B_{\gamma}$		
2000 - 1	Bx2+By2 = (0.5+1.5~	0/2
w	= 9.095 eN	
m=	928 kg	

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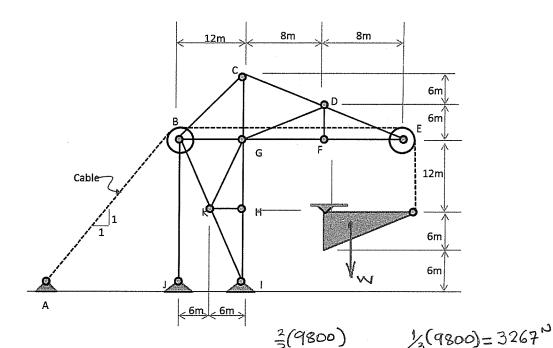
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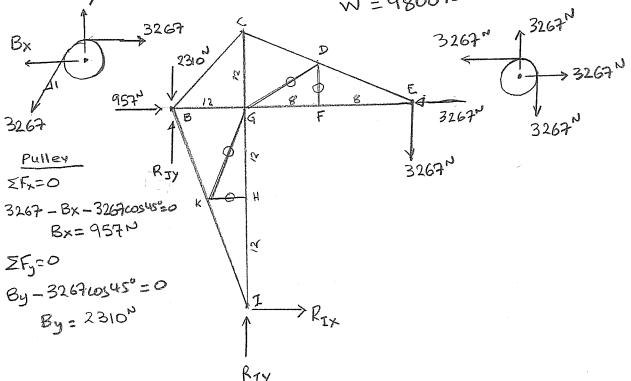


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Truss							
Summar	y of the results						
Member	Force						
JB	2574 C						
BC	6160 T						
CD	5445 T						
DE	5445T						
EF	7623C						
FD	0						
FG	7623C						
GC	7623c						
GD	0						
GB	0 7623 c						
GH	7623 C						
HK	,						
HI	7623 C						
IK	5165 T						
KB	5165 T						
KG	0						

	=6533
Ву	W = 9800 N
Bx 3267	3267 1 3267



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$$\begin{bmatrix} \Sigma F_{X}=0 \end{bmatrix} & 957 + R_{IX} - 3267 = 0 & R_{IX}= 2310^{N} \end{bmatrix} 0$$

$$\begin{bmatrix} \Sigma F_{Y}=0 \end{bmatrix} - 2310 + R_{JY} + R_{JY} - 3267 = 0$$

$$R_{JY} + R_{JY} = 5577 \tag{2}$$

$$\left[\sum M_{I} = 0 \right] -12R_{Jy} + 12(2310) - 24(957) - 16(3267) + 24(3267) = 0$$

$$-12R_{Jy} + 30888 = 0$$

$$\left[R_{Jy} = 2574N \right]$$
(3)

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