Name: JUST ID#:   Teacher: د. عدنان القطامه

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1. If Force **F** is to have a component along the u axis of $F_u = 9 \, kN$, determine the magnitude of its component F_v along the v axis.
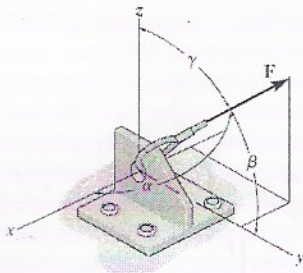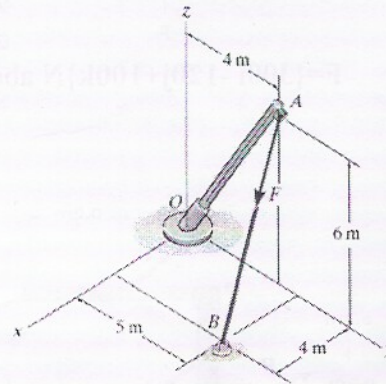
A)4.39 kN   B)5.12 kN   C)6.59 kN   D)5.86 kN
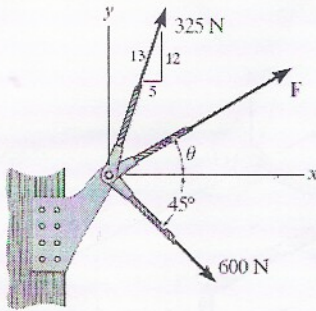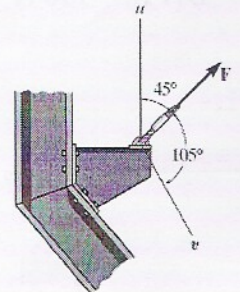
2. If the resultant force acting on the bracket is to be **800 N** directed along the positive x-axis, determine   the direction of the force θ.

A)19.5°   B)31.8°
C)39.5°   D)26.4°

3. Find the magnitude of the projected component of the force **F= 500 N** along the pipe OA.

A)366 N   B)427 N   C)305 N   D)244 N

**4.** The force F acts on the bracket as shown. If the magnitude of the x and z components of F are $F_x = 400 \, N$ and $F_z = 500 \, N$, respectively, and β= 60°, find the coordinate direction angle γ.

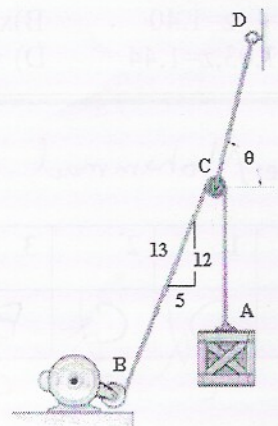A) 61.3°   B) 47.4°   C) 39.2°   D) 43.9°

5. The members of a truss are connected to gusset plate. If the forces are concurrent at point O. The magnitudes of F and T for equilibrium are: Given: F1= 8 kN, F2=10.2 kN, Θ1= 45° ,Θ = 30°

A) F=7.5 kN and T= 13.3 kN
B) F=7.5 kN and T= 5.0 kN
C) F=16.0 kN and T= 17.6 kN
D) F=10.2 kN and T= 8.0 kN
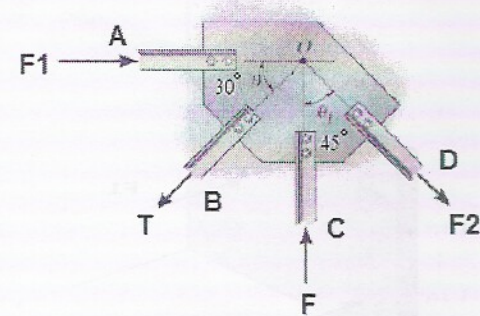
6. The cords *CD* can support a maximum load *T of 300 N* . The maximum weight of the crate that can be hoisted at constant velocity, and the angle θ for equilibrium are:

A) W=51 N and θ = 75 degree
B)W=102 N and θ = 78.69 degree
C)W=153 N and θ = 78.69 degree
D) W=102 N and θ = 75 degree

7. For the fig shown, given:

$a = 0.6$ m, $b = 1.2$ m, $c = 0.8$ m
$d = 0.9$ m, $e = 0.4$ m, $f = 0.6$ m
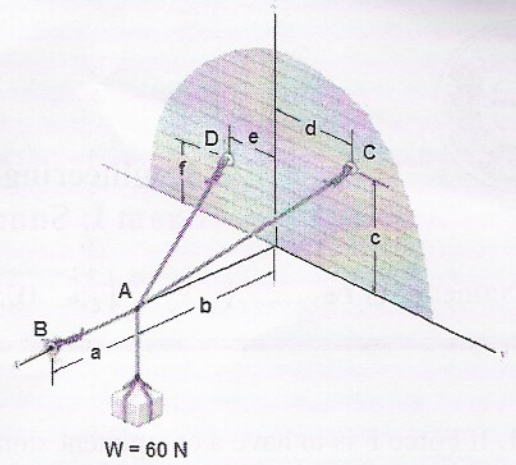
The tension in cables AD required to hold the crate of weight $W = 60$ N in equilibrium are:
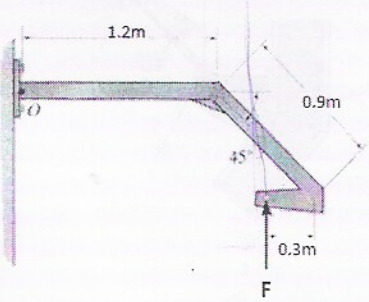- A) $T_{AD} = 108.84$ N
- B) $T_{AD} = 87.91$ N
- C) $T_{AD} = 47.44$ N
- D) $T_{AD} = 190$ N

8. Determine the moment of the force F = 7.3 kN about point O.
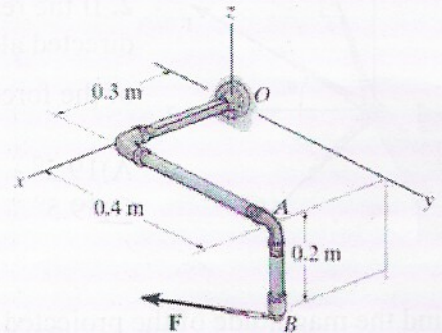- A) 4.6 kN.m
- B) 7.7 kN.m
- C) 11.2 kN.m
- D) 5.4 kN.m

9. Determine the magnitude of the moment of the force
$F = \{300i - 120j + 100k\}$N about the x axis.
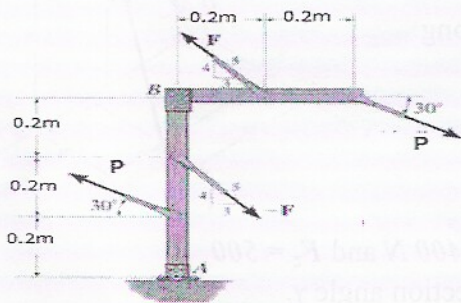- A) 50 N.m
- B) 20 N.m
- C) 16 N.m
- D) -16 N.m

10. Determine the required magnitude of force **F** if the resultant couple moment on the frame is 200 N.m clockwise and P = 1630 N.
- A) 2466 N
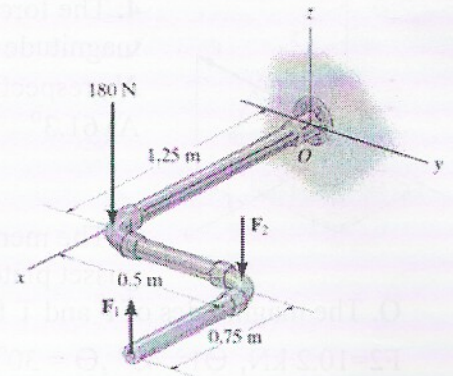- B) 2213 N
- C) 1862 N
- D) 3324 N

11. If $F_1 = 50$ N and $F_2 = 60$ N the magnitudes of the equivalent resultant force and couple moment acting at O are:
- A) |Mo|=245 N.m , |FR|=190N
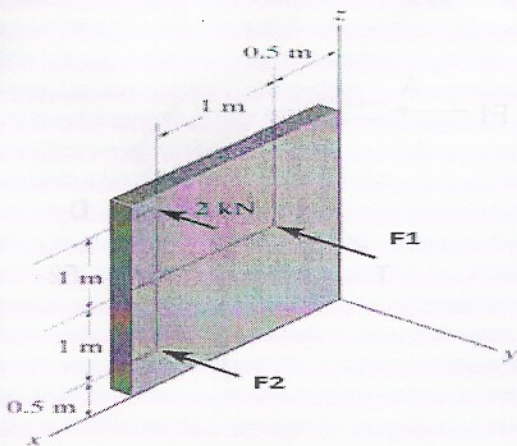- B) |Mo|=226 N.m , |FR|= 190 N
- C) |Mo|=200 N.m , |FR|=190N
- D) |Mo|=226 N.m , |FR|=290N

12. $F_1 = 4$ kN and $F_2 = 2.5$ kN, if the resultant force of the three parallel force system acting on the plate is -8.5j kN then the x,z location of the resultant force in meters is :
- A) x=1, z=1.40
- B) x=0.95 z=1.41
- C) x=1.03, z=1.44
- D) x=0 z=0

Name: JUST ID#: Teacher:

Q	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	D	C	B	Q	C	D	B	C	D	D	C	C
	C	D	C	B	C	C	B	C	C	A	C	C