Unit 2 - Week 1

Assignment 1

The due date for submitting this assignment has passed. Due on 2020-02-12, 23:59 IST.
As per our records you have not submitted this assignment.

1) The two structural members, one of which is in tension and the other in compression, exert the indicated forces on joint O. Determine the magnitude of the resultant $\mathbf{R}$ of the two forces and the angle θ which $\mathbf{R}$ makes with the positive x-axis *1 point*

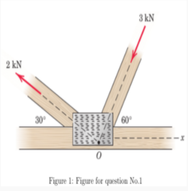

Figure 1: Figure for question No.1

- $R = 3.6$ kN, $\theta = 206°$
- $R = 9.6$ kN, $\theta = 106°$
- $R = 15.6$ kN, $\theta = 56°$
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
$R = 3.6$ kN, $\theta = 206°$

2) At what angle θ must the 800-N force be applied in order that the resultant $\mathbf{R}$ of the two forces has a magnitude of 2000 N? For this condition, determine the angle β between $\mathbf{R}$ and the vertical *1 point*

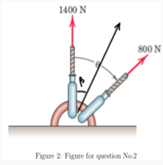

Figure 2: Figure for question No.2

- $\theta = 90.5°$, $\beta = 10.2°$
- $\theta = 60.5°$, $\beta = 5.2°$
- $\theta = 51.3°$, $\beta = 18.2°$
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\theta = 51.3°$, $\beta = 18.2°$

3) Determine the tension in cables BA and BC necessary to support the 60-kg cylinder in Figure 3 *1 point*

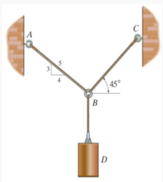

Figure 3: Figure for question No.3

- $T_{BA} = 276$ N, $T_{BC} = 220$ N
- $T_{BA} = 220$ N, $T_{BC} = 276$ N
- $T_{BA} = 420$ N, $T_{BC} = 476$ N
- $T_{BA} = 476$ N, $T_{BC} = 420$ N

No, the answer is incorrect.
Score: 0
Accepted Answers:
$T_{BA} = 420$ N, $T_{BC} = 476$ N

4) The magnitude of moment of the 90-N force about point O for the condition $\theta = 15°$. *1 point*

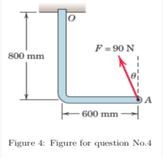

Figure 4: Figure for question No.4

- 66.5 Nm
- 45.5 Nm
- 90.5 Nm
- 33.5 Nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
33.5 Nm

5) During a steady right turn, a person exerts the forces shown on the steering wheel. Note that each force consists of a tangential component and a radially inward component. Determine the moment exerted about the steering column at O *1 point*

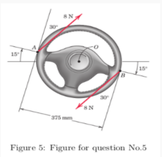

Figure 5: Figure for question No.5

- 2.6 Nm
- 25.0 Nm
- 10.5 Nm
- 15.6 Nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.6 Nm

6) Determine and locate the resultant $\mathbf{R}$ of the two forces and one couple acting on the beam from the fixed end *1 point*

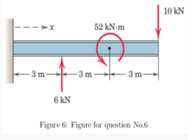

Figure 6: Figure for question No.6

- $R = 3$ kN, $x = 7$ m
- $R = 3.5$ kN, $x = 3$ m
- $R = 4$ kN, $x = 4$ m
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
None of the above

7) Determine the force P required to begin rolling the uniform cylinder of mass m over the obstruction of height h *1 point*

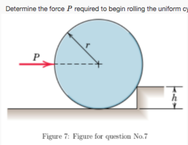

Figure 7: Figure for question No.7

- $mg\frac{\sqrt{rh-h^2}}{r-h}$
- $mg\frac{\sqrt{2rh-h^2}}{r-h}$
- $mg\frac{\sqrt{2rh-r^2}}{r-h}$
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
$mg\frac{\sqrt{2rh-h^2}}{r-h}$