ENGG 349 Dynamics, Spring 2017

Quiz 1, T01 – Tuesday 23 May 2017

Name:

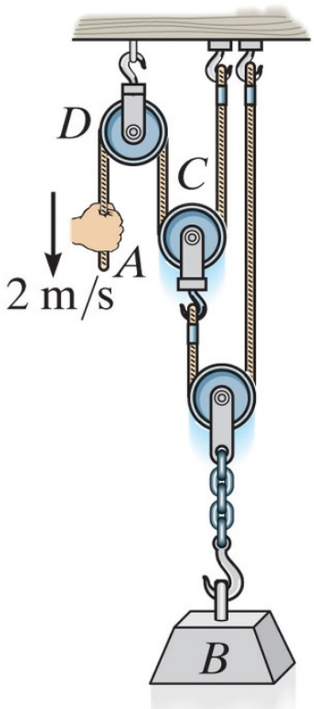
Student ID:

Seating List #:

The duration of this quiz is 30 minutes. Attempt both questions. Only non-programmable calculators may be used during the quiz. Please use the formula sheet that was provided in the first tutorial session. Please draw a box around the final answers in each question.

Question 1: (4 marks) *(Dynamics, Hibbeler, 14th ed., Problem 12-195 modified)*

If the end of the cable at *A* is pulled down with a speed of $v_A = 2\ \frac{m}{s}$, determine the velocity of block *B*.

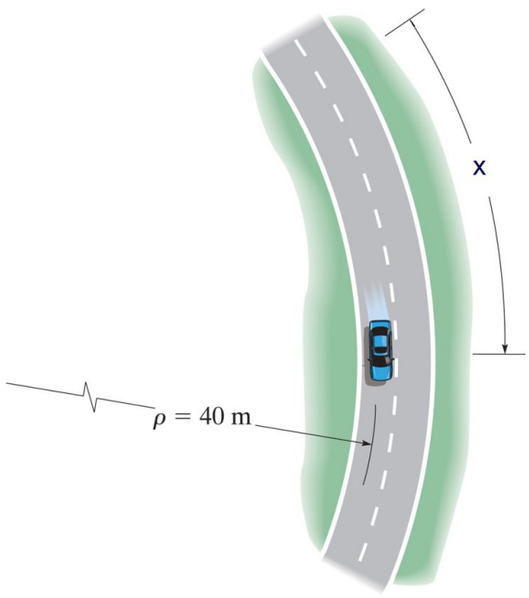


Question 2: (4 marks) *(Dynamics, Hibbeler, 14th ed., Problem 12-129 modified)*

The car starts from rest at $x = 0$ and increases its speed at a constant acceleration of $4\ \frac{m}{s^2}$.

a) Determine the time when the magnitude of acceleration becomes $20\ \frac{m}{s^2}$.

b) Show the components of acceleration on the blue car in the figure below at the above calculated time.



ENGG 349 Dynamics, Spring 2017

Quiz 1, T02 – Thursday 25 May 2017

Name:

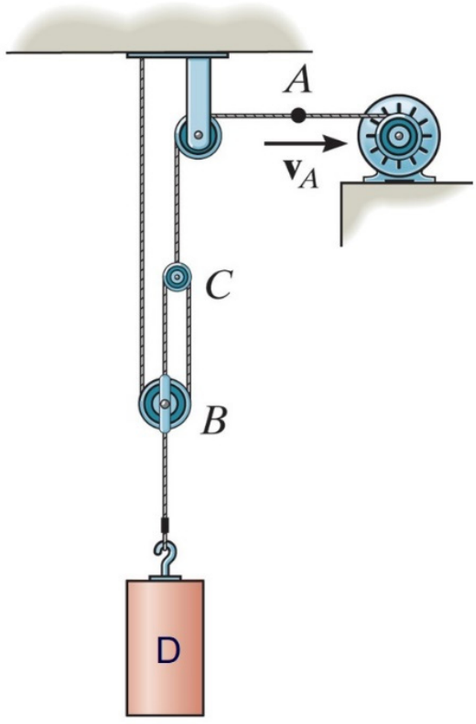
Student ID:

Seating List #:

The duration of this quiz is 30 minutes. Attempt both questions. Only non-programmable calculators may be used during the quiz. Please use the formula sheet that was provided in the first tutorial session. Please draw a box around the final answers in each question.

Question 1: (4 marks) *(Dynamics, Hibbeler, 14th ed., Problem 12-204 modified)*

The cable at *A* is being drawn toward the motor at $v_A = 8\ \frac{m}{s}$. Determine the velocity of block *D*.



Question 2: (4 marks) *(Dynamics, Meriam, 8th ed., Sample Problem 2-7 modified)*

To anticipate the dip and hump in the road, the driver of a car applies her brakes to produce a uniform deceleration. Her speed is $27.8\ \frac{m}{s}$ at the bottom *A* of the dip and $13.89\ \frac{m}{s}$ at the top *C* of the hump, which is $120\ m$ along the road from *A*.

a) Calculate the total acceleration at point *C* if the radius of curvature at *C* is $\rho_C = 150\ m$.

b) Show the components of acceleration at point *C* in the figure below.