EXAM 3

Name: ____________________________ Student ID #: ____________________________

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A. \(16 \text{ pts.}\) Two objects, A and B, have identical masses, \(m_A = m_B = m\), and are initially at rest on separate, frictionless, horizontal surfaces.

Simultaneous horizontal forces are applied to each object (\(F_A\) to object A and \(F_B\) to object B) for a time of 5.0 s each. \(F_A = 2F_B\). In the spaces below enter A, B, or same (if the quantity described is the same for A and B) to best answer the statements.

1. \(\text{A}\) The object that experiences the greater net force.
2. \(\text{B}\) The object that experiences the larger impulse over the 5.0 s.
3. \(\text{A}\) The object with the smaller momentum after 5.0 s.
4. \(\text{A}\) The object that has traveled the greater distance in 5.0 s.
5. \(\text{A}\) The object upon which the greater amount of work was done by the applied force over the 5.0 s.
6. \(\text{A}\) The object with the greater KE after the 5.0 s.
7. \(\text{A}\) The object on which the average power produced by the applied force during the 5.0 s was greater.
8. \(\text{B}\) The object with the smaller speed at the end of 5.0 s.

B. \(14 \text{ pts.}\) Starting from rest a wheel undergoes a uniform counterclockwise circular acceleration. Points A, B and C are located along a radius line. See figure. In the spaces below enter A, B, C or same (the quantity described is the same at A, B and C) that best answers the questions.

1. \(\text{SAME}\) The point showing the largest instantaneous angular speed.
2. \(\text{SAME}\) The point showing the largest tangential speed.
3. \(\text{SAME}\) The point showing the largest angular acceleration.
4. \(\text{SAME}\) The point showing the largest tangential acceleration.
5. \(\text{SAME}\) The point shown the largest centripetal acceleration at a given instant.
6. \(\text{SAME}\) The point that rotates through the largest number of radians in 3.0 s.
7. \(\text{C}\) The point that travels the smallest distance in 3.0 s.