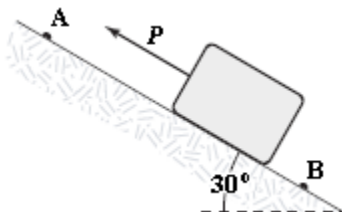
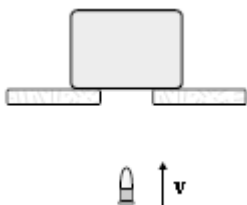


## Honors Physics Exam 2nd Semester 2019 B

- \_\_\_ 1. At  $t = 0$ , a wheel rotating about a fixed axis at a constant angular acceleration has an angular velocity of 3.5 rad/s. Three seconds later it has turned through 7.0 complete revolutions. What is the angular acceleration of this wheel?
- \_\_\_ 2. A 3.54-kg block slides down a frictionless incline from point A to point B. A force (magnitude  $P = 4.2$  N) acts on the block between A and B, as shown. Points A and B are 3.2 m apart. If the kinetic energy of the block at A is 20.0 J, what is the kinetic energy of the block at B?



- \_\_\_ 3. The turntable of a record player has an angular velocity of 9.50 rad/s when it is turned off. The turntable comes to rest 3.5 s after being turned off. Through how many radians does the turntable rotate after being turned off? Assume constant angular acceleration.
- \_\_\_ 4. How much work is done by a person lifting a 5.0-kg object from the bottom of a well at a constant speed of 3.0 m/s for 8.0 s?
- \_\_\_ 5. A 6.20-kg object is pulled along a horizontal surface at a constant speed by a 19.5-N force acting  $28.0^\circ$  above the horizontal. How much work is done by this force as the object moves 9.0 m?
- \_\_\_ 6. A wheel (radius = 0.35 m) starts from rest and rotates with a constant angular acceleration of  $4.25 \text{ rad/s}^2$ . At the instant when the angular velocity is equal to 5.2 rad/s, what is the magnitude of the total linear acceleration of a point on the rim of the wheel?
- \_\_\_ 7. A 2.5-kg ball is attached to the end of a 3.5-m string to form a pendulum. This pendulum is released from rest with the string horizontal. At the lowest point in its swing when it is moving horizontally, the ball collides elastically with a 3.50-kg block initially at rest on a horizontal frictionless surface. What is the speed of the block just after the collision?
- \_\_\_ 8. A 6.2-kg particle is moving horizontally with a speed of 7.5 m/s when it strikes a vertical wall. The particle rebounds with a speed of 4.6 m/s. What is the magnitude of the impulse delivered to the particle?
- \_\_\_ 9. A 17.5-g bullet moving  $1.5E3$  m/s strikes and passes through a 1.62-kg block of wood initially at rest, as shown. The bullet emerges from the block with a speed of 250 m/s. a) What is the change in momentum of the bullet? B) To what maximum height will the block rise above its initial position?



**Honors Physics Exam 2nd Semester 2019**  
**Answer Section**

**MULTIPLE CHOICE**

- |           |        |                  |
|-----------|--------|------------------|
| 1. ANS: B | PTS: 2 | DIF: Average     |
| 2. ANS: D | PTS: 2 | DIF: Average     |
| 3. ANS: E | PTS: 2 | DIF: Average     |
| 4. ANS: E | PTS: 2 | DIF: Average     |
| 5. ANS: E | PTS: 2 | DIF: Average     |
| 6. ANS: B | PTS: 2 | DIF: Average     |
| 7. ANS: A | PTS: 3 | DIF: Challenging |
| 8. ANS: C | PTS: 2 | DIF: Average     |
| 9. ANS: A | PTS: 2 | DIF: Average     |