1. . The instantaneous velocity of a point on the outer edge of a disk with a diameter of 4 m that is rotating at 120 revolutions per minute is most nearly: (A) 4 m/s (B) 6 m/s (C) 12 m/s (D) 25 m/s (E) 50 m/s

2. . A washing machine, starting from rest, accelerates within 3.14 s to a point where it is revolving at a frequency of 2.00 Hz. Its angular acceleration is most nearly: (A) 0.100 rad/s2 (B) 0.637 rad/ s2 (C) 2.00 rad/ s2 (D) 4.00 rad/ s2 (E) 6.28 rad/ s2

3. . What is the direction of the angular velocity vector for the second hand of a clock going from 0 to 30 seconds? (A) Outward from the clock face (B) Inward toward the clock face (C) Upward (D) Downward (E) To the right

4. . Which of the following are means of maximizing the torque of a force applied to a rotating object? I. Maximize the magnitude of the applied force II. Apply the force as close as possible to the axis of rotation III. Apply the force perpendicular to the displacement vector between the axis of rotation and the point of applied force (A) I only (B) II only (C) I and II only (D) I and III only (E) I, II, and III

5. . What is the torque on the pivot of a pendulum of length R and mass m, when the mass is at an angle ? (A) (B) (C) (D) (E)

6. . Two objects rest on a seesaw.  The first object has a mass of 3 kg and rests 10 m from the pivot. The other rests 1 m from the pivot. What is the mass of the second object if the seesaw is in equilibrium? (A) 0.3 kg (B) 3 kg (C) 10 kg (D) 30 kg (E) 50 kg

7. . What is the angular acceleration of a 0.1 kg record with a radius of 0.1 m to which a torque of 0.05 N Â· m is applied? The moment of inertia of a disk spinning about its center is . (A) 0.1 rad/s2 (B) 0.5 rad/s2 (C) 1 rad/s2 (D) 5 rad/s2 (E) 10 rad/s2

8. . A disk of mass m and radius R rolls down an inclined plane of height h without slipping. What is the velocity of the disk at the bottom of the incline? The moment of inertia for a disk is .(A) (B) (C) (D) (E)

9. . A catapult with a basket of mass 50 kg launches a 200 kg rock by swinging around from a horizontal to a vertical position with an angular velocity of 2.0 rad/s. Assuming the rest of the catapult is massless and the catapult arm is 10 m long, what is the velocity of the rock as it leaves the catapult?  (A) 10 m/s (B) 20 m/s (C) 25 m/s (D) 50 m/s (E) 100 m/s

10. . How should the mass of a rotating body of radius r be distributed so as to maximize its angular velocity? (A) The mass should be concentrated at the outer edge of the body (B) The mass should be evenly distributed throughout the body (C) The mass should be concentrated at the axis of rotation (D) The mass should be concentrated at a point midway between the axis of rotation and the outer edge of the body (E) Mass distribution has no impact on angular velocity