1) When a train makes a curve, different parts of the wheel rims
A) cover a different distance in the same time.
B) must all expand at the same time.
C) must all contract at the same time.
D) vibrate at different rates.

2) Horses that move with the fastest linear speed on a merry-go-round are located
A) near the center.
B) near the outside.
C) anywhere, because they all move at the same speed.

3) Consider a string with several rocks tied along its length at equally spaced intervals. You whirl the string overhead so that the rocks follow circular paths. Compared to a rock in the middle of the string, a rock at the outer end moves
A) half as fast.
B) twice as fast.
C) at the same linear speed.

4) A broom is easier to balance on its end when the heavier end (the brush end) is
A) nearest your hand.
B) highest, farthest from your hand.
C) same either way

5) The rotational inertia of your leg is greater when your leg is
A) straight.
B) bent.
C) same either way

6) The center of mass of a human body is located at a point
A) that is fixed, but different for different people.
B) that is always directly behind the belly button.
C) that changes as a person bends over.
D) none of these

7) A baseball bat is balanced on a fulcrum. The center of gravity of the bat is located
A) closer to the handgrip.
B) above the fulcrum.
C) near the heavy end.

8) The center of gravity of a circular disk of sheet metal is
A) at the center of the disk.
B) midway between the center and the outside.
C) two-thirds of the way between the center and the outside.
D) impossible to predict without knowing the metal density.
9) A carnival has a Ferris wheel where the seats are located halfway between the center and outside rim. If you were at the outside rim, your angular speed while riding on this Ferris wheel would be
A) less and your tangential speed more.
B) more and your tangential speed less.
C) the same and your tangential speed less.

10) For a system in mechanical equilibrium
A) the resultant force must be zero.
B) the resultant torques must be zero.
C) the resultant forces and torques must both be zero.
D) the resultant forces and torques must be equal.

11) A flywheel's diameter is twice that of another of the same shape and mass. The larger flywheel's rotational inertia is
A) four times the other's.
B) two times the other's.
C) the same as the other's.
D) half the other's.

12) Which will roll down an incline in the shortest time, a can filled with water or the same can filled with ice?
A) water
B) ice
C) both the same
D) Not enough information is given.

1) Answer: A
2) Answer: B
3) Answer: B
4) Answer: B
5) Answer: A
6) Answer: C
7) Answer: B
8) Answer: A
9) Answer: C
10) Answer: C
11) Answer: A
12) Answer: A