Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) 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 be equal.
D) the resultant forces and torques must both be zero.

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

3) Your pet hamster sits on a record player whose angular speed is constant. If he moves to a point twice as far from the center, then his linear speed
A) remains the same. B) doubles. C) halves.

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

5) A coin and a ring roll down an incline starting at the same time. The one to reach the bottom first will be the
A) coin.
B) ring.
C) Both reach the bottom at the same time.

6) Two people are balanced on a seesaw. If one person leans toward the center of the seesaw, that person's end of the seesaw will
A) rise and then fall.
B) fall and then rise.
C) rise.
D) fall.
E) stay at the same level.

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

8) Newton discovered
A) that gravity is universal.
B) gravity.
C) neither

9) A very massive object A and a less massive object B move toward each other under the influence of gravitation. Which force, if either, is greater?

A) the force on A
B) the force on B
C) Both forces are the same.

10) Two objects move toward each other because of gravity. As the objects get closer and closer, the force between them

A) increases, then decreases.
B) increases.
C) remains constant.
D) decreases.
E) decreases, then increases.

11) Inside a freely falling runaway elevator, your

A) gravitational interaction with the Earth is zero.
B) apparent weight is zero.
C) acceleration is zero.
D) all of these
E) none of these

12) Passengers in a high-flying jumbo jet feel their normal weight in flight, while passengers in the orbiting space shuttle do not. This is because passengers in the space shuttle are

A) without support forces.
B) beyond the main pull of Earth's gravity.
C) above the Earth's atmosphere.
D) all of these
E) none of these

13) How far must one travel to get away from the Earth's gravitational field?

A) to a region beyond the solar system
B) Forget it; you can't travel far enough.
C) to a region above the Earth's atmosphere
D) to a region well beyond the moon

14) Which pulls on the oceans of the Earth with the greater force?

A) the moon B) the sun C) Both pull the same.

15) Which is most responsible for the ocean tides?

A) the moon
B) the sun
C) Both contribute equally.

16) According to Kepler's laws, the paths of planets about the sun are
A) straight lines.
B) circles.
C) ellipses.
D) parabolas.
E) none of these

17) A rock is thrown upward at 50 degrees with respect to the horizontal. As it rises, neglecting air drag, its horizontal component of velocity
A) increases. B) decreases. C) remains unchanged.

18) An Earth satellite is simply a projectile
A) freely falling around the Earth.
B) approaching the Earth from outer space.
C) floating motionless in space near the Earth.

19) The tangential velocity of an Earth satellite is its velocity
A) parallel to the surface of the Earth.
B) attributed to satellites moving in any direction.
C) perpendicular to the surface of the Earth.

20) The radial velocity of an Earth satellite is its velocity
A) perpendicular to the surface of the Earth.
B) attributed to satellites moving in any direction.
C) parallel to the surface of the Earth.
D) none of these