Name_____

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

1) The scientist to first introduce the concept of inertia was
A) Galileo. B) Copernicus. C) Aristotle. D) Newton.

2) A sheet of paper can be withdrawn from under a container of milk without toppling it if the paper is jerked quickly. This best demonstrates that
A) the milk carton has inertia.
B) gravity tends to hold the milk carton secure.
C) there is an action-reaction pair of forces.
D) the milk carton has no acceleration.
E) none of these

3) When you stand at rest on a pair of bathroom scales, the readings on the scales will always
A) add up to equal your weight.
B) each equal your weight.
C) each be half your weight.

4) Hang from a pair of gym rings and the upward support forces of the rings will always
A) each be half your weight.
B) add up to equal your weight.
C) each equal your weight.

5) The force of friction on a sliding object is 10 N. The applied force needed to maintain a constant velocity is
A) 10 N. B) less than 10 N. C) more than 10 N.

6) A truck is moving at constant velocity. Inside the storage compartment, a rock is dropped from the midpoint of the ceiling and strikes the floor below. The rock hits the floor
A) behind the midpoint of the ceiling.
B) exactly below the midpoint of the ceiling.
C) ahead of the midpoint of the ceiling.
D) More information is needed to solve this problem.
E) none of these

7) According to Newton's law of inertia, a railroad train in motion should continue going forever even if its engine is turned off. We never observe this because railroad trains
A) always have forces that oppose their motion.
B) must go up and down hills.
C) move too slowly.
D) are much too heavy.

8) Whirl a rock at the end of a string and it follows a circular path. If the string breaks, the tendency of the rock is to

A) revolve in a smaller circle. B) increase its speed.
C) continue to follow a circular path. D) follow a straight-line path.

9) When a rocket ship accelerating in outer space runs out of fuel, it

A) accelerates for a short time, then slows down to a constant velocity.
B) no longer accelerates.
C) accelerates for a short time, slows down, and eventually stops.

10) If no external forces are acting on a moving object, it will

A) move slower and slower until it finally stops.
B) continue moving at the same velocity.
C) continue moving at the same speed.

11) The two measurements necessary for calculating average speed are

A) acceleration and time.
B) distance and acceleration.
C) velocity and distance.
D) distance and time.
E) velocity and time.

12) A horse gallops a distance of 10 kilometers in a time of 30 minutes. Its average speed is

A) 40 km/h. B) 30 km/h. C) 15 km/h. D) 20 km/h.

13) While an object near the Earth's surface is in free fall, its

A) mass decreases. B) acceleration increases.
C) velocity increases. D) mass increases.

14) A hockey puck is set in motion across a frozen pond. If ice friction and air resistance are neglected, the force required to keep the puck sliding at constant velocity is

A) equal to its weight.
B) equal to the product of its mass times its weight.
C) equal to its weight divided by its mass.
D) zero.

15) If a freely falling object were somehow equipped with a speedometer, its speed-reading would increase each second by about

A) a variable amount.
B) 10 m/s.
C) 15 m/s.
D) 5 m/s.
E) depends on its initial speed

16) If an object moves with constant acceleration, its velocity must
A) change by varying amounts depending on its speed.
B) change by the same amount each second.
C) always decrease.
D) be constant also.

17) A car accelerates at 2 meters/s/s. Assuming the car starts from rest, how far will it travel in 10 s?
A) 10 m B) 200 m C) 40 m D) 2 m E) 100 m

18) A ball tossed vertically upward rises, reaches its highest point, and then falls back to its starting point. During this time the acceleration of the ball is always
A) in the direction of motion. B) directed downward.
C) opposite its velocity. D) directed upward.

19) While a car travels around a circular track at a constant speed, its
A) inertia is zero. B) acceleration is zero.
C) velocity is zero. D) none of the above

20) Disregarding air resistance, objects fall with constant
A) distances each successive second. B) velocity.
C) acceleration. D) speed.