chapter 2 practice

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

1) Inertia is defined as a 1) _____
A) force. B) property of matter.
C) change in motion. D) none of the above

2) If no external forces act on a moving object, it will 2) _____
A) continue moving at the same speed.
B) move slower and slower until it finally stops.
C) come to an abrupt halt.
D) none of the above

3) A hockey puck sliding across the ice finally comes to rest because 3) _____
A) it seeks its proper and natural state.
B) of friction.
C) that's just the way it is.

4) 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 4) _____
A) equal to its weight. B) equal to its weight divided by its mass.
C) equal to its mass times its weight. D) none of the above

5) When no forces act on moving objects their paths are normally 5) _____
A) straight lines. B) circles.
C) ellipses. D) all of the above

6) 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 6) _____
A) follow a circular path. B) slow down.
C) follow a straight–line path. D) stop.

7) Which concept is being illustrated when a tablecloth is quickly yanked beneath dishes resting on a table? 7) _____
A) equilibrium B) friction C) support force D) inertia

8) A package falls off a truck that is moving at 30 m/s. Neglecting air resistance, the horizontal speed of the package just before it hits the ground is 8) _____
A) zero. B) less than 30 m/s but more than zero.
C) about 30 m/s. D) more than 30 m/s.

9) When a rocket ship gaining speed in outer space runs out of fuel, it 9) _____
A) gains speed for a short time, then slows down to a constant velocity.
B) gains speed for a short time, slows down, and eventually stops.
C) no longer gains speed.

10) A moving van with a stone lightly glued to the midpoint of its ceiling smoothly moves at constant velocity. When the glue gives way, the stone falls and hits the floor 10) _____
A) ahead of the midpoint of the ceiling.
B) exactly below the midpoint of the ceiling.
C) behind the midpoint of the ceiling.
D) none of the above

11) While you are standing in the aisle of a bus, the driver suddenly makes a left turn. You lurch to the right due to 11) _____
A) an unbalanced force.
B) your tendency to keep moving forward.
C) an equilibrium challenge.

12) Nellie pulls with a force of 50 N on a horizontal rope tied to a tree at rest. The net force on the rope is 12) _____
A) 50 N and rope tension is 0 N.
B) 50 N and rope tension is also 50 N.
C) zero and rope tension is 50 N.
D) zero and rope tension is also zero.

13) When you quickly jerk a cart forward that has a ball resting in the middle, the 13) _____
A) front of the cart hits the ball.
B) back of the cart hits the ball.
C) neither, for the ball rides along in the middle as the cart moves forward.
D) All of the above depending on how quickly the cart is pulled.

14) A force is a vector quantity because it has both 14) _____
A) magnitude and direction.
B) mass and velocity.
C) action and reaction counterparts.
D) speed and direction.

15) A block pulled to the left with 15 N and to the right with 5 N at the same time experiences a net force of 15) _____
A) 5 N.
B) 10 N.
C) 15 N.
D) 20 N.

16) A tree stump is pulled northward by a 10–N force at the same time a 25–N force pulls it southward. The resultant force has a magnitude of 16) _____
A) 0 N.
B) 15 N.
C) 25 N.
D) 150 N.

17) When a pair of 10–N forces act on a box of candy, the net force on the box is 17) _____
A) zero.
B) about 14 N.
C) 20 N.
D) Any of the above depending on the directions of forces.

18) When Nellie Newton hangs by the ends of a rope draped over a large pulley, the tension in each supporting vertical strand is 18) _____
A) half her weight.
B) equal to her weight.
C) twice her weight.
D) none of the above

19) If Nellie hangs from a horizontal bar that is supported by four vertical ropes, the tension in the ropes 19) _____

A) are each half her weight. B) are each equal to her weight.
C) add to equal her weight. D) none of the above

20) Suspend your body from a pair of vertical ropes and the tension in each rope will be 20) _____

A) half your weight. B) equal to your weight.
C) greater than your weight. D) none of the above

21) Suspend your body from a pair of ropes slightly angled from the vertical and the tension in each rope will be 21) _____

A) equal your weight. B) half your weight.
C) greater than half your weight. D) none of these

22) When Nellie Newton hangs at rest in the middle of a clothesline, tensions will be the same in each side of the rope when 22) _____

A) the lengths of each rope are the same.
B) the angles for both sides of the rope are equal.
C) she is in equilibrium.

23) The net force on any object in equilibrium is 23) _____

A) zero. B) equal to its weight.
C) less than its weight. D) non–zero when motion is involved.

24) Burl and Paul paint signs together on a scaffold. Compared to their weights plus the weight of the scaffold, the sum of tensions in the supporting ropes is 24) _____

A) less. B) the same. C) greater. D) zero.

25) Burl and Paul have a total weight of 1300 N. The tensions in the supporting ropes that support their scaffold add to 1700 N. The weight of the scaffold itself must be 25) _____

A) 300 N. B) 400 N. C) 500 N. D) 600 N.

26) The net force acting on an insect falling downward at constant velocity is 26) _____

A) zero. B) the weight of the insect.
C) upward air resistance. D) none of the above

27) The support force on a 10–N book at rest on a table is 27) _____

A) slightly less than 10 N. B) 10 N.
C) slightly greater than 10 N. D) dependent on the position of the book.

28) Jason weighs 150 N and sits on his big brother's shoulders. Big brother weighs 400 N. The support force supplied by the floor must be 28) _____

A) 150 N. B) 400 N.
C) 550 N. D) more than 550 N.

29) The support force on a 30–kg dog sleeping on the floor is 29) _____

A) less than 300 N. B) about 300 N.
C) more than 300 N. D) nonexistent while asleep.

30) The force that causes Earth to orbit the Sun is due to gravity, while the force needed to keep Earth moving as it circles the Sun is 30) _____

A) inertia. B) due to gravity.
C) due to both inertia and gravity. D) no force at all.

31) If you toss a coin straight upward while in a train moving at constant velocity, the coin will land 31) _____

A) as if you were at rest. B) in front of you. C) in back of you.

32) If you toss a coin straight upward in train that gains speed while the coin is in the air, the coin will land 32) _____

A) as if you were at rest. B) in front of you. C) in back of you.

33) Earth continually moves about 30 km/s through space, which means the wall you stand next to also is moving at 30 km/s. When you jump vertically the wall doesn't slam into you because 33) _____

A) the speeds of you and Earth cancel out.
B) you're moving horizontally just as fast as the wall.
C) your upward motion is small compared with Earth's speed.
D) motion of the Sun counteracts your motion.

1) B
2) A
3) B
4) D
5) A
6) C
7) D
8) C
9) C
10) B
11) B
12) C
13) B
14) A
15) B
16) B
17) D
18) A
19) C
20) A
21) C
22) B
23) A
24) B
25) B
26) A
27) B
28) C
29) B
30) D
31) A
32) C
33) B