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   4) _____
   neglected, the force required to keep the puck sliding at constant velocity is
   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 6) _____
   of the rock is to
   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   7) _____
   a table?
   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   8) _____
   speed of the package just before it hits the ground is
   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

    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

10) _____

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

    A) an unbalanced force.
    B) your tendency to keep moving forward.
    C) an equilibrium challenge.

11) _____

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

    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.

12) _____

13) When you quickly jerk a cart forward that has a ball resting in the middle, the

    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.

13) _____

14) A force is a vector quantity because it has both

    A) magnitude and direction.   B) mass and velocity.
    C) action and reaction counterparts.   D) speed and direction.

14) _____

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

    A) 5 N.   B) 10 N.   C) 15 N.   D) 20 N.

15) _____

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

    A) 0 N.   B) 15 N.   C) 25 N.   D) 150 N.

16) _____

17) When a pair of 10–N forces act on a box of candy, the net force on the box is

    A) zero.
    B) about 14 N.
    C) 20 N.
    D) Any of the above depending on the directions of forces.

17) _____

18) When Nellie Newton hangs by the ends of a rope draped over a large pulley, the tension in each supporting vertical strand is

    A) half her weight.   B) equal to her weight.
    C) twice her weight.   D) none of the above

18) _____

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

    A) are each half her weight.   B) are each equal to her weight.

    C) add to equal her weight.   D) none of the above

19) _____

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

    A) half your weight.   B) equal to your weight.

    C) greater than your weight.   D) none of the above

20) _____

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

    A) equal your weight.   B) half your weight.

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

21) _____

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

    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.

22) _____

23) The net force on any object in equilibrium is

    A) zero.   B) equal to its weight.

    C) less than its weight.   D) non-zero when motion is involved.

23) _____

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

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

24) _____

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

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

25) _____

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

    A) zero.   B) the weight of the insect.

    C) upward air resistance.   D) none of the above

26) _____

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

    A) slightly less than 10 N.   B) 10 N.

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

27) _____

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

    A) 150 N.   B) 400 N.

    C) 550 N.   D) more than 550 N.

28) _____

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

    A) less than 300 N.   B) about 300 N.

    C) more than 300 N.   D) nonexistent while asleep.

29) _____

3

30) The force that causes Earth to orbit the Sun is due to gravity, while the force needed to keep   30) _____
Earth moving as it circles the Sun is
    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   32) _____
will land
    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   33) _____
also is moving at 30 km/s. When you jump vertically the wall doesn't slam into you because
    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