Chapter 6 practice

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

1) Which has the greater momentum when moving? 1) _____
A) a container ship
B) a bullet
C) either of these depending on speed

2) Which of the following has the largest momentum relative to Earth's surface? 2) _____
A) a tightrope walker crossing Niagara Falls
B) a pickup truck speeding along a highway
C) a Mack truck parked in a parking lot
D) the Science building on campus
E) a mouse running across your room

3) A freight train rolls along a track with considerable momentum. If it rolls at the same speed but has twice as much mass, its momentum is 3) _____
A) zero.
B) twice.
C) four times as much.
D) unchanged.

4) A same–size iron ball and wooden ball are dropped simultaneously from a tower and reach the ground at the same time. The iron ball has a greater 4) _____
A) speed.
B) acceleration.
C) momentum.
D) all of the above
E) none of the above

5) The speed of a 4–kg ball with a momentum of 12 kg m/s is 5) _____
A) 3 m/s.
B) 4 m/s.
C) 12 m/s.
D) 48 m/s.
E) none of the above

6) The mass of a ball moving at 3 m/s with a momentum of 48 kg m/s is 6) _____
A) 4 kg.
B) 12 kg.
C) 16 kg.
D) 144 kg.
E) none of these

7) A motorcycle of mass 100 kilograms slowly rolls off the edge of a cliff and falls for three seconds before reaching the bottom of a gully. Its momentum upon hitting the ground is 7) _____
A) 1,000 kg m/s.
B) 2,000 kg m/s.
C) 3,000 kg m/s.
D) 4,000 kg m/s.
E) 9,000 kg m/.

8) When Peter tosses an egg against a sagging sheet, the egg doesn't break due to 8) _____
A) reduced impulse. B) reduced momentum.
C) both of these D) neither of these

9) Padded dashboards in cars are safer in an accident than non–padded ones because passengers hitting the dashboard encounter 9) _____
A) lengthened time of contact. B) shorter time of contact.
C) decreased impulse. D) increased momentum.

10) A car traveling along the highway brakes to a stop over a certain distance. More braking force is required if the car has 10) _____
A) more mass.
B) more momentum.
C) less stopping distance.
D) all of the above
E) none of the above

11) It is correct to say that impulse is equal to 11) _____
A) momentum. B) a corresponding change in momentum.
C) force multiplied by the distance it acts. D) velocity multiplied by time.

12) To catch a fast–moving ball, you extend your hand forward before contact with the ball and let it ride backward in the direction of the ball's motion. Doing this reduces the force of contact on your hand principally because the 12) _____
A) force of contact is reduced.
B) relative velocity is less.
C) time of contact is increased.
D) time of contact is decreased.
E) none of the above

13) Which produces more force: driving into a very massive concrete wall with no "give," or having a head–on collision with an identical car moving toward you at the same speed? 13) _____
A) car B) wall
C) both the same D) need more information

14) Whether a truck comes to a stop by crashing into a haystack or a brick wall, the stopping force is 14) _____
A) greater with the haystack.
B) greater with the brick wall.
C) both the same

15) Whether a truck comes to a stop by crashing into a haystack or a brick wall, the impulse is 15) _____
A) greater with the haystack.
B) greater with the brick wall.
C) both the same

16) A heavy truck and a small car rolling down a hill at the same speed are forced to stop in the same amount of time. Compared with the force that stops the car, the force needed to stop the truck is 16) _____
A) greater. B) smaller. C) the same.

17) A cannon recoils while firing a cannonball. The speed of the cannon's recoil is relatively small because the 17) _____

A) force against the cannon is smaller than against the ball.
B) momentum is mainly concentrated in the cannonball.
C) cannon has much more mass than the cannonball.
D) momentum of the cannon is smaller.

18) The average braking force of a 1000–kg car moving at 10 m/s braking to a stop in 5 s is 18) _____

A) 1000 N. B) 2000 N. C) 3000 N. D) 4000 N. E) 5000 N.

19) A karate chop is more effective if one's hand 19) _____

A) follows through upon impact.
B) bounces upon impact.
C) extends the time upon impact.

20) A piece of putty moving with 1 unit of momentum strikes and sticks to a heavy bowling ball that is initially at rest. Both move with a combined momentum of 20) _____

A) less than 1 unit. B) more than 1 unit.
C) 1 unit. D) need more information

21) The change in momentum that occurs when a 1.0 kg ball traveling at 4.0 m/s strikes a wall and bounces back at 2.0 m/s is 21) _____

A) 2 kg m/s. B) 4 kg m/s. C) 6 kg m/s. D) 8 kg m/s.

22) When Freddy Frog drops vertically from a tree onto a horizontally–moving skateboard, the speed of the skateboard 22) _____

A) decreases.
B) increases.
C) neither decreases nor increases.

23) Two billiard balls having the same mass and speed roll toward each other. What is their combined momentum after they meet? 23) _____

A) zero
B) half the sum of their original momentums
C) twice the sum of their original momentums
D) need more information

24) A 1–kg chunk of putty moving at 1 m/s collides with and sticks to a 5–kg bowling ball initially at rest. The bowling ball and putty then move with a momentum of 24) _____

A) 0 kg m/s.
B) 1 kg m/s.
C) 2 kg m/s.
D) 5 kg m/s.
E) more than 5 kg m/s.

25) A 5–kg fish swimming at 1 m/s swallows an absent–minded 1–kg fish at rest. The speed of the larger fish after lunch is 25) _____

A) 1/2 m/s. B) 2/5 m/s. C) 5/6 m/s. D) 6/5 m/s. E) 1 m/s.

26) A 5–kg shark swimming at 1 m/s swallows an absent–minded 1–kg fish swimming toward it at 4 m/s. The speed of the shark after his meal is 26) _____

A) 1/2 m/s. B) 1/5 m/s. C) 1/6 m/s. D) 2/3 m/s. E) 3/2 m/s.

27) A 5000–kg freight car collides with a 10,000–kg freight car at rest. They couple upon collision and move at 2 m/s. What was the initial speed of the 5000–kg car? 27) _____

A) 4 m/s
B) 5 m/s
C) 6 m/s
D) 8 m/s
E) none of the above

28) Two identical objects in outer space, one moving at 2 m/s, the other at 1 m/s, have a head–on collision and stick together. Their combined speed after the collision is 28) _____

A) 0.5 m/s.
B) 0.33 m/s.
C) 0.67 m/s.
D) 1.0 m/s.
E) none of the above

Answer Key
Testname: CHAPTER 6 PRACTICE

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