Chapter 5 practice

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

1) When you rub your hands together, you 1) _____
A) can push harder on one hand than the other.
B) cannot push harder on one hand than the other.
C) need more information

2) Your friend says that the heavyweight champion of the world cannot exert a force of 50 N on an isolated piece of tissue paper with his best punch. You 2) _____
A) agree that it can't be done.
B) have reservations about this assertion.
C) disagree, for a good punch easily delivers this much force.

3) One end of a rope is pulled with 100 N, while the opposite end also is pulled with 100 N. The tension in the rope is 3) _____
A) 0 N. B) 50 N. C) 100 N. D) 200 N.

4) The winner in a tug–of–war exerts the greatest force on 4) _____
A) the opponent.
B) his or her end of the rope.
C) the ground.

5) Arnold Strongman and Suzie Small each pull very hard on opposite ends of a rope in a tug–of–war. The greater force on the rope is exerted by 5) _____
A) Arnold, of course.
B) Suzie, surprisingly.
C) both the same, interestingly.

6) Harry pulls on the end of a spring attached to a wall. The reaction to Harry's pull on the spring is 6) _____
A) the wall pulling oppositely on the spring.
B) the spring pulling on Harry.
C) both the wall and the spring pulling on Harry.
D) none of the above

7) The force that accelerates the orange and apple system featured in your textbook is actually supplied by the 7) _____
A) apple. B) orange. C) floor.

8) To produce an acceleration to a system there 8) _____
A) must be a net force on the system.
B) may or may not be a net force on the system.
C) must be acceleration outside the system also.

9) The lift experienced by a helicopter involves an action–reaction pair of forces between the 9) _____
A) helicopter blades and the air.
B) mass of the helicopter and Earth's mass.
C) weight of the helicopter and atmospheric pressure.
D) motion of the helicopter relative to the ground below.
E) any or all of the above

10) A player hits a ball with a bat. If action is the force of the bat against the ball, reaction is the 10) _____
A) air resistance on the ball.
B) weight of the ball.
C) force that the ball exerts on the bat.
D) grip of the player's hand against the ball.
E) weight of the bat.

11) When a baseball player bats a ball with a force of 1000 N, the reaction force that the ball exerts against the bat is 11) _____
A) less than 1000 N. B) more than 1000 N.
C) 1000 N. D) need more information

12) While you stand on the floor you are pulled downward by gravity, and supported upward by the floor. Gravity pulling down and the support force pushing up 12) _____
A) make an action–reaction pair of forces.
B) do not make an action–reaction pair of forces.
C) need more information

13) Neglecting air resistance, once a tossed ball leaves your hand 13) _____
A) no further forces act on it.
B) only the force due to gravity acts on it.
C) inertia becomes the force acting on it.
D) your tossing force remains while the ball goes upward.
E) your tossing force remains until it comes to a stop.

14) An automobile and a golf cart traveling at the same speed collide head–on. The impact force is 14) _____
A) greater on the automobile.
B) greater on the golf cart.
C) the same for both.

15) A Mack truck and a Volkswagen traveling at the same speed have a head–on collision. The vehicle that undergoes the greatest change in velocity will be the 15) _____
A) Volkswagen. B) Mack truck. C) same for both.

16) As a ball falls, the action force is the Earth's pull on the ball. The reaction force is the 16) _____
A) air resistance acting against the ball. B) acceleration of the ball.
C) ball's pull on Earth. D) none of the above

17) A pair of air pucks on an air table are set in motion when a compressed spring between them is released. If one puck moves with twice the speed of the other, then its mass is 17) _____
A) half the mass of the other. B) the same mass as the other.
C) twice the mass as the other. D) need more information

18) A pair of toy freight cars, one twice the mass of the other, fly apart when a compressed spring that joins them is released. The spring exerts the greater force on the 18) _____
A) heavier car. B) lighter car. C) same on each.

19) A pair of toy freight cars, one twice the mass of the other, fly apart when a compressed spring that joins them is released. Acceleration will be greater for the 19) _____
A) heavier car. B) lighter car. C) same on each.

20) An astronaut of mass 70 kg weighs 700 N on Earth's surface. His weight on the surface of Mars, where the acceleration due to gravity is 3.7 m/s^2, would be about 20) _____
A) the same as on Earth.
B) 130 N.
C) 260 N.
D) 370 N.
E) none of the above

21) You stand on your skateboard and exert a 50–N push on the wall next to you. If your mass is 60 kg you'll momentarily accelerate from the wall at about 21) _____
A) 0.08 m/s^2. B) 0.8 m/s^2.
C) 8.0 m/s^2. D) none of the above

22) A vertical vector of 3 units combined with a horizontal vector of 4 units has a resultant of 22) _____
A) 1 unit. B) 5 units. C) 7 units.

23) When Nellie hangs suspended from a pair of ropes that are not vertical, the tension in each rope is 23) _____
A) less than half her weight. B) half her weight.
C) more than half her weight. D) her weight.

24) The force due to gravity that acts on a block of ice that slides down an icy ramp 24) _____
A) remains equal to *mg* at all angles.
B) decreases as the slope of the ramp increases.
C) becomes greatest when the ramp is vertical.

25) The normal force that acts on a block of ice that slides on a ramp 25) _____
A) is equal to *mg* at all angles.
B) decreases as the slope of the ramp increases.
C) becomes greatest when the ramp is vertical.

26) As the sloped surface supporting a shoe becomes steeper 26) _____
A) the shoe's weight *mg* remains unchanged.
B) the normal force becomes less.
C) friction needed to keep it at rest increases.
D) all of the above
E) none of the above

27) Nellie tosses a ball upward at an angle. Neglecting air resistance, the horizontal component of the initial velocity 27) _____
A) decreases with time. B) remains constant. C) increases with time.

28) Nellie tosses a ball upward at an angle. Neglecting air resistance, the vertical component of the initial velocity 28) _____

A) decreases with time to reach the top.
B) remains constant.
C) increases with time to reach the top.

Answer Key
Testname: CHAPTER 5 PRACTICE

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