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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

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

1) A snail travels 45 cm in 20 min. Its average speed is
   A) 2.25 cm/h.
   B) 15 cm/h.
   C) 90 cm/h.
   D) 135 cm/h.

2) The time needed for a car whose speed is 60 km/h to travel 800 m is
   A) 0.48 min.
   B) 0.8 min.
   C) 4.5 min.
   D) 13 min.

3) In 6 min a person running at 10 km/h covers a distance of
   A) 167 m.
   B) 600 m.
   C) 1000 m.
   D) 1667 m.

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4) The minimum number of unequal forces whose vector sum can equal zero is
   A) 2.
   B) 3.
   C) 4.
   D) 5.

5) Which of the following units could be associated with a vector quantity?
   A) km/s^2
   B) kg/s
   C) hours
   D) m^3

6) Which one or more of the following pairs of displacements cannot be added to give a resultant displacement of 2 m?
   A) 1 m and 1 m
   B) 1 m and 2 m
   C) 1 m and 3 m
   D) 1 m and 4 m

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7) Which of the following sets of displacements might be able to return a car to its starting point?
   A) 2, 8, 10, and 25 km
   B) 5, 20, 35, and 65 km
   C) 60, 120, 180, and 240 km
   D) 100, 100, 100, and 400 km

8) The length *C* of the longest side of a right triangle is related to the lengths A and B of the other sides by the formula
   A) C = A + B.
   B) $C = A^2 + B^2$.
   C) $C = \sqrt{A+B}$.</p>
   D) $C = \sqrt{A^2+B^2}$.</p>

9) A boat whose velocity through the water is 20 km/h is moving in a river whose current is 6 km/h relative to the riverbed. The velocity of the boat relative to the riverbed must be between
   A) 6 and 20 km/h.
   B) 6 and 26 km/h.
   C) 12 and 20 km/h.
   D) 14 and 26 km/h.

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10) A ship travels 20 km to the south and then 40 km to the west. The ship's displacement from its starting point is
   A) 20 km.
   B) 40 km.
   C) 45 km.
   D) 60 km.

11) A car whose speed is a steady 50 km/h
   A) cannot be accelerated.
   B) is accelerated when it climbs a hill, but not when it descends.
   C) is accelerated when it descends a hill, but not when it climbs it.
   D) is accelerated when it climbs a hill, goes over the crest, and descends on the other side.

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12) A stone is thrown upward from a roof at the same time as another, identical stone is dropped from there. The two stones
A) reach the ground at the same time.
B) have the same speed when they reach the ground.
C) have the same acceleration when they reach the ground.
D) None of the choices are correct.

13) Ball A is thrown horizontally and ball B is thrown upward.
A) Ball A has the greater downward acceleration.
B) Ball B has the greater downward acceleration.
C) They have the same downward acceleration.
D) Neither has any downward acceleration.

14) The idea that all conclusions about the natural world must be based upon experiment and observation was first emphasized in the work of
A) Aristotle.
B) St. Thomas Aquinas.
C) Galileo.
D) Newton.

15) A car starts from rest and reaches a speed of 15 m/s in 10s. Its acceleration is
A) 0.67 m/s^2.
B) 1.5 m/s^2.
C) 6.7 m/s^2.
D) 15 m/s^2.

16) A car moving at 15 m/s comes to a stop in 3 s. Its acceleration is
A) -0.2 m/s^2.
B) -5 m/s^2.
C) -15 m/s^2.
D) -45 m/s^2.

17) A car starts from a speed of 10 m/s with an acceleration of 2 m/s^2. The time needed for the car to reach 30 m/s is
A) 10 s.
B) 20 s.
C) 30 s.
D) 40 s.

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18) An airplane reaches its take off speed of 60 m/s in 30 s starting from rest. The time it spends in going from 40 m/s to 60 m/s is
A) 10 s.
B) 15 s.
C) 20 s.
D) 25 s.

19) A stone dropped from a cliff reaches the ground in 4 s. The stone's speed is then
A) 10 m/s.
B) 40 m/s.
C) 196 m/s.
D) 392 m/s.

20) A ball thrown upward at 30 m/s will continue to rise for about
A) 0.5 s.
B) 1.0 s.
C) 3.0 s.
D) 4.0 s.

21) A ball thrown upward at 30 m/s will reach the ground after about
A) 1.0 s.
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B) 2.0 s.
C) 6.0 s.
D) 8.0 s.

22) In the first 3 s after a car starts from rest with an acceleration of 4 m/s^2 it will travel
A) 6 m.
B) 12 m.
C) 18 m.
D) 72 m.

23) A car that starts from rest with a constant acceleration travels 50 m in the first 5 s. The car's acceleration is
A) 2 m/s^2.
B) 4 m/s^2.
C) 10 m/s^2.
D) 20 m/s^2.

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24) A car starts from rest with a constant acceleration of 5 m/s^2. How much time does the car take to cover the first 160 m?
A) 8 s
B) 16 s
C) 32 s
D) 64 s

25) A car moving at 10 m/s undergoes an acceleration of 1.2 m/s^2. In the next 5 s the car travels
A) 15 m.
B) 25 m.
C) 55 m.
D) 65 m.

26) When its brakes are applied, a car moving at 10 m/s undergoes an acceleration of -1.2 m/s^2. In the next 5 s the car travels
A) 15 m.
B) 32 m.
C) 35 m.
D) 47 m.

27) When its brakes are applied, a car moving at 10 m/s undergoes an acceleration of -1.2 m/s^2. How far does the car travel before it comes to a stop?
A) 42 m
B) 78 m
C) 83 m
D) 124 m

28) After a stone dropped from a cliff has fallen 20 m, the stone's speed is approximately
A) 10 m/s.
B) 20 m/s.
C) 196 m/s.
D) 392 m/s.

29) A net force of 10 N gives an object an acceleration of 5 m/s^2. What net force would give the same object an acceleration of 1 m/s^2?
A) 1 N
B) 2 N
C) 5 N
D) 50 N

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30) A force that gives a 2-kg object an acceleration of 1.6 m/s^2 would give an 8-kg object an acceleration of
A) 0.2 m/s^2.
B) 0.4 m/s^2.
C) 1.6 m/s^2.
D) 6.4 m/s^2.

31) A 3000-kg truck accelerates from 10 m/s to 30 m/s in 8 s. The net force on the truck is
A) 765 N.
B) 7500 N.
C) 11,250 N.
D) 15,000 N.

32) A force of 2 N acts on a 2-kg object, initially at rest, for 2 s. During that time the object moves a distance of
A) 1 m.
B) 2 m.
C) 4 m.
D) 8 m.

33) A net horizontal force of 2000 N is applied to an 800-kg car at rest. The car's speed after 5 s will be
A) 1.3 m/s.
B) 2.5 m/s.
C) 6.25 m/s.
D) 12.5 m/s.

34) A car whose mass is 1600 kg (including the driver) has a maximum acceleration of 1.2 m/s^2. If three 80-kg passengers are also in the car, its maximum acceleration will be
A) 0.5 m/s^2.
B) 0.72 m/s^2.
C) 1.04 m/s^2.
D) 1.2 m/s^2.

35) The braking force needed to bring a 4000-kg truck to a stop from a speed of 20 m/s in 5 s is
A) 1000 N.
B) 1633 N.
C) 9800 N.
D) 16,000 N.

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36) A 300-g ball is struck with a bat with a force of 150 N. If the bat was in contact with the ball for 0.02 s, the ball flew off at
A) 0.01 m/s.
B) 0.1 m/s.
C) 2.5 m/s.
D) 10 m/s.

37) When a 430-g soccer ball is kicked, the impact lasts for 0.04 s. In order for the ball to fly off at 8 m/s, the force of the kick must be
A) 86 N.
B) 138 N.
C) 178 N.
D) 86 kN.

38) The weight of an object is
A) the same everywhere on the earth's surface.
B) greater at the poles than at the equator.
C) less at the poles than at the equator.
D) Any of these choices, depending on the phase of the moon.

39) Relative to what she weighs on the earth, an astronaut visiting another planet
A) weighs less.
B) weighs the same.
C) weighs more.
D) Any of these choices, depending on the planet.

40) A 50-kg person weighs
A) 5.1 N.
B) 23 N.
C) 110 N.
D) 490 N.

41) The mass of a sack of potatoes whose weight is 200 N is
A) 20.4 kg.
B) 91 kg.
C) 210 kg.
D) 440 kg.

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42) The mass of a 2,200-lb elephant is
A) 224 kg.
B) 1,000 kg.
C) 4,840 kg.
D) 21,560 kg.

43) A crane exerts an upward force of 200 N on a 20-kg crate. The crate's upward acceleration is
A) 0.
B) 0.2 m/s^2.
C) 10 m/s^2.
D) 98 m/s^2.

44) According to Newton's third law of motion,
A) there is no such thing as a single force acting on an object.
B) for every force there is an equal and opposite reaction force, but each acts on a different object.
C) action and reaction forces need not be equal, but must act in opposite directions.
D) action and reaction forces must be equal, but need not act in opposite directions.

45) The sun exerts a gravitational force on the earth and the earth exerts a gravitational force on the sun. The force the earth exerts TBEXAM.COM
A) is the action force.
B) is the reaction force.
C) can be considered either as the action or as the reaction force.
D) is not part of an action-reaction pair because the earth and sun are not in contact with each other.

46) A moose weighing 3 kN is standing still. The force the ground exerts on the moose is
A) 0.
B) more than 0 but less than 3 kN.
C) 3 kN.
D) more than 3 kN.

47) A jumper whose weight is *w* presses down on the floor with the force *F* and leaves the floor as a result. The force the floor exerted on the jumper was
A) equal to *w* and less than *F*.
B) equal to *w* and equal to *F*.
C) more than *w* and equal to *F*.
D) more than *w* and more than *F*.

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48) An object moving in a circle at constant speed is accelerated
A) in the direction of its motion.
B) toward the center of the circle.
C) away from the center of the circle.
D) Any of these choices, depending on the circumstances.

49) The radius of the path of an object moving in a circle at constant speed is halved. If the speed remains the same, the centripetal force needed is
A) one-quarter as much as before.
B) half as much as before.
C) twice as much as before.
D) four times as much as before.

50) The speed of an object moving in a circle is doubled. The centripetal force needed is
A) one-quarter as much as before.
B) half as much as before.
C) twice as much as before.
D) four times as much as before.

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51) A 500-g ball moves in a circle 40 cm in radius at a speed of 4 m/s. The centripetal force on the ball is
A) 10 N.
B) 20 N.
C) 40 N.
D) 80 N.

52) A 1200-kg car is traveling at 10 m/s on a road such that the maximum frictional force between its tires and the road is 4000 N. The minimum turning radius of the car is
A) 15 m.
B) 30 m.
C) 60 m.
D) 120 m.

53) On a rainy day the maximum frictional force between a car's tires and a certain level road surface is reduced to half its usual value. The maximum safe speed for rounding a curve is
A) unchanged.
B) reduced to 25% of its usual value.
C) reduced to 50% of its usual value.
D) reduced to 71% of its usual value.

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54) A ball of mass 200 g is whirled in a circle at the end of a string 100 cm long whose breaking strength is 100 N. Neglecting gravity, the maximum speed of the ball is approximately
A) 2 m/s.
B) 7 m/s.
C) 10 m/s.
D) 50 m/s.

55) A bullet is fired upward. As it rises,
A) its mass and weight remain the same.
B) its mass and weight decrease.
C) its mass remains the same while its weight decreases.
D) its mass decreases while its weight remains the same.

56) A hole is drilled to the center of the earth and a ball is dropped into it. When the ball is at the earth's center, compared with their respective values at the earth's surface,
A) its mass and weight are the same.
B) its mass and weight are both 0.
C) its mass is the same and its weight is 0.
D) its weight is the same and its mass is 0.

57) If the moon were half as far from the earth as it is now, the gravitational force it exerts on the earth would be
A) one-quarter its present value.
B) half its present value.
C) twice its present value.
D) four times its present value.

58) Mars is about 1.5 times as far from the sun as the earth and its mass is about 0.1 times the earth's mass. Relative to the gravitational force the sun exerts on the earth, the force it exerts on Mars is about
A) 0.0044 as much.
B) 0.0067 as much.
C) 0.044 as much.
D) 0.067 as much.

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59) A woman whose mass is 60 kg on the earth's surface is in a spacecraft at a height of 2 earth radii above the earth's surface. Her mass there is
A) 6.7 kg.
B) 15 kg.
C) 20 kg.
D) 60 kg.

60) A man whose mass is 80 kg on the earth's surface is in a spacecraft at a height of 2 earth radii above the earth's surface. His weight there is
A) 87 N.
B) 196 N.
C) 261 N.
D) 784 N.

61) The escape speed needed for an object to leave the earth permanently
A) depends on its mass.
B) is less than the minimum speed it needs to become an earth satellite.
C) is equal to the minimum speed it needs to become an earth satellite.
D) is more than the minimum speed it needs to become an earth satellite.

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Answer Key

Test name: Chapter 02

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

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38) B
39) D
40) D
41) A
42) B
43) B
44) B
45) C
46) C
47) C
48) B
49) C
50) D
51) B
52) B
53) D
54) B
55) C
56) C
57) D
58) C
59) D
60) A
61) D

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