SAT Physics Practice Test 20

Part C

1. A person who normally weighs 900N at sea level climbs to the top of Mt. Everest. While on top of Mt. Everest that person will weigh

A. zero.

B. approximately 900N.

C. considerably less than 900N but more than zero.

D. considerably more than 900N.

E. Need more information.

2. If a shaft were drilled through the center of the earth and all you had to do was step into the shaft to "fall" to the other side, and a 800N person took the trip, her weight at the exact time she passed through the exact center of the earth would be

A. zero.

B. 800N.

C. less than 800N but more than zero.

D. more than 800N.

E. Need more information.

3. A 750N person stands on a scale while holding a briefcase inside a freely falling elevator. Which of the following is true?

A. If the briefcase were released it would rise to the ceiling.

B. The person's acceleration is zero.

C. The person's attraction toward the earth is zero.

D. The person's apparent weight is zero.

E. If the briefcase were released it would fall to the floor.

4. The time it takes a satellite to make one orbit around the earth depends on the satellite's

A. acceleration.

B. weight.

C. direction of rotation.

D. distance from earth.

E. launch speed.

5. Geosynchronous satellites remain over the same spot on the earth's surface because they

A. orbit the earth every 24 hours.

B. are in polar orbits.

C. rotate opposite the earth's rotational direction.

D. have a varying orbital height.

E. use terrain reading technology to remain on station.

6. Rutherford's results in his famous gold foil experiment proved that atoms

A. are mostly space.

B. are in continuous motion.

C. have negative orbitals.

D. have diffuse charge distribution.

E. have dense crystalline structure.

7. A hanging weight stretches a spring 8 cm. If the weight is doubled and the spring constant is not exceeded, how much will the spring stretch?

A. 4 cm

B. 8 cm

C. 12 cm

D. 16 cm

E. 20 cm

8. The volume of an ideal gas is reduced to half its original volume. The density of the gas

A. remains the same.

B. is halved.

C. is doubled.

D. is tripled.

E. is quadrupled.

9. Refrigerators and freezers perform their functions by

A. converting hot air to cold air.

B. keeping hot air out with cold air pressure.

C. removing heat from inside themselves.

D. blowing cold inside them.

E. producing cold air.

10. An empty soda can with a few ml of water inside is heated to steaming and quickly inverted into an ice water bath. The can is instantly crushed because

A. energy in the can is lost.

B. water vapor condenses leaving a vacuum, which sucks the can in.

C. water vapor condenses and outside air pressure crushes the can.

D. the cold water shrinks the hot can.

E. water pressure in the ice bath crushes the can

11. 41. The first law of thermodynamics is a restatement of

A. Guy-Lassac's Law.

B. the principle of entropy.

C. the principle of enthalpy.

D. conservation of energy.

E. Avogadro's hypothesis.

12. If 360 g of water at 95°C is mixed with 275 g of water at 10°C, what is the resulting temperature of the water?

A. 37°C

B. 49°C

C. 58°C

D. 70°C

E. 82°C

13. While anchored at sea, a captain notices the wave peaks are separated by 16 m and occur at a rate of 1 wave every 2 seconds. What is the velocity of these waves?

A. 4 m/s

B. 8 m/s

C. 16 m/s

D. 32 m/s

E. 64 m/s

14. Some opera singers are able to use their voice to shatter a crystal glass. They can do this because of

A. acoustic reflection.

B. multiple echoes.

C. interference.

D. resonance.

E. beats.

15. 

Which set of pulses will soon show constructive interference?

A. A

B. B

C. C

D. D

E. E

Part D

1. 

Which set of pulses has already been through interference?

A. A

B. B

C. C

D. D

E. E

2. 

Which set of pulses will soon show destructive interference?

A. A

B. B

C. C

D. D

E. E

3. A rider on a subway train hears the engineer blow the train whistle. A moment later she hears an answering whistle from an approaching train. Why does the whistle she hears from the approaching train change pitch?

A. The frequency of the waves of the approaching train's whistle is decreasing.

B. The frequency of the waves of the approaching train's whistle is increasing.

C. The loudness of the waves of the approaching train is decreasing.

D. The loudness of the waves of the approaching train is increasing.

E. The echoes of the two trains' whistles are combining.

4. Two charged objects are moved 50% closer to one another. Which statement about the electric force between the objects is true?

A. The force between them doubles.

B. The force between them halves.

C. The force between them remains the same.

D. The force between them reverses.

E. The force between them operates in the same direction.

5. The distribution of the charge density on the surface of a conducting solid depends upon

A. the density of the conductor.

B. the shape of the conductor.

C. the size of the conductor.

D. the age of the conductor.

E. the substance of the conductor.

6. A pair of point charges, which have charges of -3 *micro coulombs* and -4 *micro coulombs*, is separated by 2 cm. What is the value of the force between them?

A. 600N

B. 300N

C. 540N

D. 270N

E. 400N

7. At what point between a pair of charged parallel plates will the electric field be strongest?

A. It is strongest between the plates.

B. It is strongest near the positive plate.

C. It is strongest near the negative plate.

D. The field is constant between the plates.

E. The field is variable, therefore the strong point also varies.

8. Which of the following best describes the electric field about a positive point charge?

A. The field strengthens as the distance from the point charge increases.

B. The field is a constant throughout space.

C. The field weakens as the distance from the point change increases.

D. The field is oriented toward the point charge.

E. The field cannot be determined.

9. A 6 volt battery is connected across a resistor, and a current of 1.5 *A* flows in the resistor. What is the value of the resistor?

A. 2Ω

B. 4Ω

C. 6Ω

D. 8Ω

E. 10Ω

10. As a battery ages, its internal resistance increases. This causes the current in the external circuit to

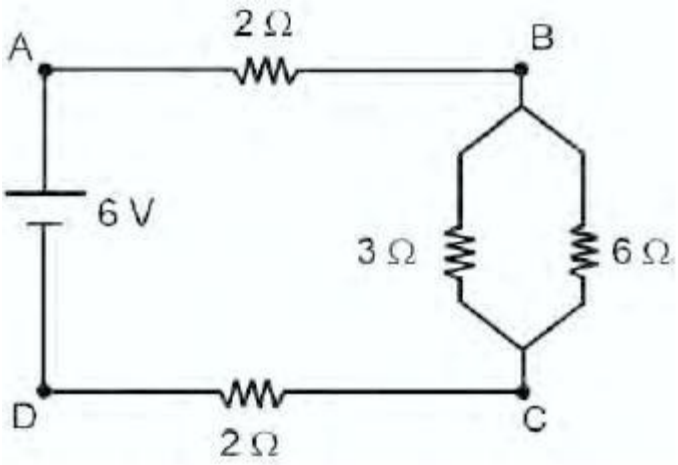
A. remain the same.

B. polarize.

C. reverse direction.

D. increase.

E. decrease.



11.

What is the resistance in the parallel circuit above between points *B* and *C*?

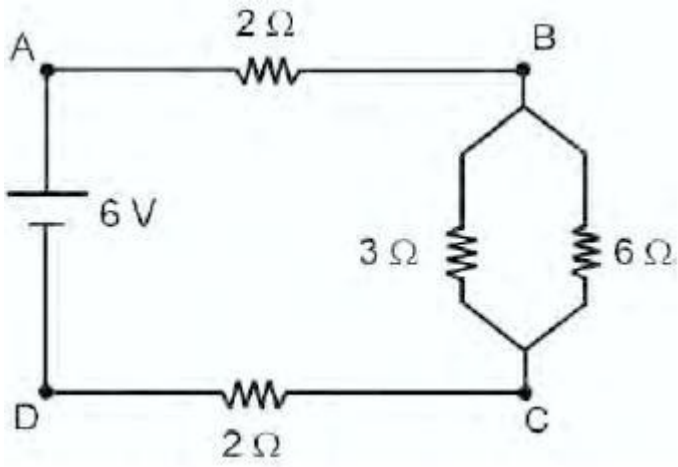
A. 2Ω

B. 4Ω

C. 6Ω

D. 8Ω

E. 10Ω



12.

The current in the circuit is

A. 1 *A*

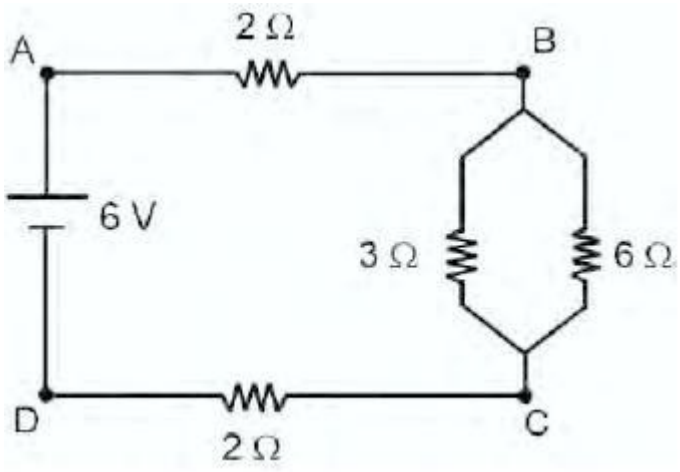
B. 2 *A*

C. 3 *A*

D. 9 *A*

E. 18 *A*

13.



What is the voltage change between point *B* and point *C*?

A. 1 *V*

B. 2 *V*

C. 3 *V*

D. 9 *V*

E. 18 *V*

14. A charged particle moving through a magnetic field will experience the largest force when

A. moving with the field.

B. moving against the field.

C. moving at a 45° angle to the field.

D. moving at a 90° angle to the field.

E. the particle will not be affected.

15. Which of the following is caused completely or in some part by magnetic lines of force?

A. The picture on a computer screen

B. Radio reception interference

C. Aurora Borealis

D. V.H.S. films

E. All of these