SAT Physics Practice Paper 35

1. What is the one factor that distinguishes each element from every other element?

A. The number of protons in the nucleus

B. The number of neutrons in the nucleus

C. The number of electrons about the nucleus

D. The total mass of the nucleus (protons plus neutrons)

E. Its position on the periodic table

2. When a switch is closed to operate a DC circuit, the electrons that cause the current

A. travel from the negative plate of the battery to the positive plate.

B. travel from the positive plate of the battery to the negative plate.

C. travel from one resistance to the next resistance.

D. travel from the negative plate of the battery to the positive plate inside the battery.

E. travel from one atom in the circuit to the next atom.

3. A car skids a distance of 54 m on a dry road. What was the velocity of the car when the skid began if the coefficient of friction between the tires and the road is .46?

A. 16 m/s

B. 22 m/s

C. 28 m/s

D. 34 m/s

E. Velocity cannot be determined with the information given.

4. A force of 53N is applied to a 176.4N object that is at rest. A frictional force of 8N must be overcome to move the object. What is the acceleration of the object?

A. .3 m/s^2

B. 2.5 m/s^2

C. 2.9 m/s^2

D. 4.24 m/s^2

E. 6.625 m/s^2

5. Two objects A and B are placed into free fall 14.7 m above the ground at exactly the same time. Object A reaches the ground in exactly 1 second, and object B reaches the ground in exactly 3 seconds. Which of the following is/are true?

I. Object B was thrown horizontally.

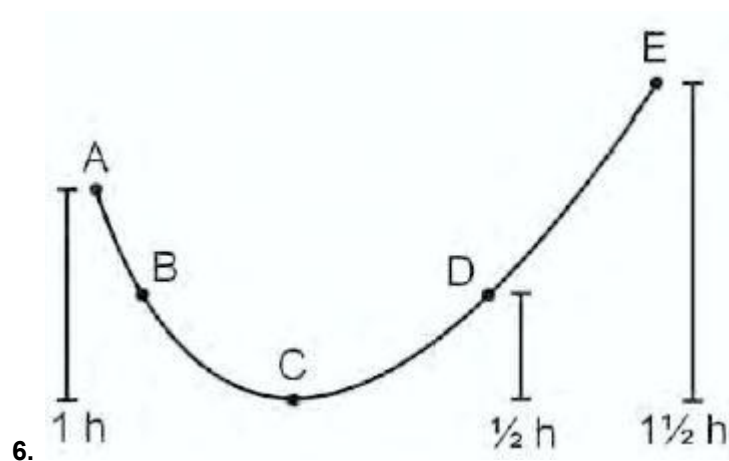II. Both objects were thrown.

III. Neither object was thrown.

A. I only

B. II only

C. I and III only

D. II and III only

E. I, II, and III

6.

A 50 gram bead slides on a frictionless wire as shown above. At what point on the wire will the bead come to a complete stop?

A. Point A

B. Point B

C. Point C

D. Point D

E. Point E

7. A container holds 1 mole of an ideal gas. If the temperature of the gas is held constant and the volume of the gas is halved, the pressure of the gas will double. This happens because

A. the gas particles have gained energy.

B. the gas particles collide with one another more often.

C. the gas particles move more slowly.

D. the gas particles collide with the container walls less often.

E. the gas particles collide with the container walls more often.

8. A step-down transformer has a coil ratio of 1.5 to 17. The voltage applied at the primary side of the transformer is 136 *V*. What is the output voltage of the transformer?

A. 1.2 *V*

B. 1.5 *V*

C. 5.25 *V*

D. 12 *V*

E. 18.75 *V*

9. A car is driving along a level road at a constant 60 km/hr. The force acting on the car from the tires of the car is

A. equal to the power of the engine.

B. the normal force times the coefficient of friction.

C. larger than the normal force times the coefficient of friction.

D. less than the normal force times the coefficient of friction.

E. zero.

10. The mass of the atom is

A. equally dispersed throughout the entire atom cloud.

B. equally divided between all its parts: the electrons, neutrons, and protons.

C. concentrated in the orbital cloud.

D. concentrated in the nucleus.

E. determined by spectroscopic analysis.

11. The reason an observer cannot detect the wave nature of a fast moving truck is

A. the momentum of the truck is too large.

B. the velocity of the wave is too large.
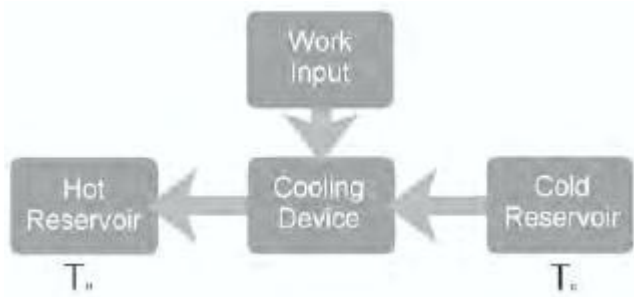
C. there are no waves to be detected.

D. the frequency is too low.

E. the wavelengths are too small.

12. A large object is placed at exactly 55% of the distance to the moon from the earth. Eventually the object will

A. fall to the sun.

B. fall to the moon.

C. fall to the earth.

D. remain in the same place.

E. drift out of the solar system.

13.

The diagrammatic representation of the cooling process above shows which of the following?

I. Negative work

II. An isothermal process

III. Increasing energy

A. I only

B. II only

C. I and III only

D. II and III only

E. I, II, and III

14. A heat engine receives 150 Joules of heat energy and performs 70 Joules of work. If heat cannot be removed from the heat engine in any other way, by what value does the internal energy of the system change?

A. 0 J

B. 40 J

C. 80 J

D. 120 J

E. 150 J

15. What information is learned from looking at the curve of an acceleration time graph?

A. The position of the object

B. The displacement of the object

C. The velocity of the object

D. The acceleration of the object

E. None of the above