

SAT Physics Practice Paper 38

1. An electron is allowed to freely move between a pair of parallel plates that have a 1.5 volt potential difference. The electron starts at the negative plate. The velocity of the electron as it strikes the positive plate is most nearly

- A. 7.3×10^{-8} m/s
- B. 7.3×10^{-5} m/s
- C. 7.3×10^5 m/s
- D. 7.3×10^8 m/s
- E. 7.3×10^{11} m/s

2. The half-life of a radioisotope is one week. How much of the substance is left after a 28-day period?

- A. 1/2
- B. 1/4
- C. 1/8
- D. 1/16
- E. 1/32

3. All of the following are examples of electromagnetic waves EXCEPT

- A. X-rays.
- B. gamma rays.
- C. sound waves.
- D. radio waves.
- E. light waves.

4. A batter hits a long fly ball. Neglecting air resistance, the baseball's horizontal component of speed is constant because it

- A. is not acted upon by any forces.
- B. is not acted upon by gravitational sources.
- C. is not acted upon by any vertical forces.
- D. is not acted upon by any horizontal forces.
- E. the net forces acting on the baseball are zero.

5. Two spheres are placed into free fall from rest. Sphere B has a mass three times larger than sphere A. Which statement(s) correctly explains the situation?

- I. Sphere B falls faster.
- II. Sphere B has more momentum when the two reach the ground.
- III. Both spheres reach the ground with the same kinetic energy.

- A. I only
- B. II only
- C. I and III only
- D. II and II only
- E. I, II, and III

6. When Johannes Kepler developed his laws for the movement of planetary bodies, one of the laws stated that the orbits of the planets about the sun are

- A. circular.
- B. elliptical.
- C. parabolic.
- D. sinusoidal.
- E. straight lines.

7. The purpose of a transformer is to do which of the following?

- A. Change voltage
- B. Reduce resistance
- C. Decrease heat transfer
- D. Increase magnetic fields
- E. Reverse current flow

8. Astronomers can tell whether a star is approaching or receding from the earth by the

- A. absorption spectra of the star.
- B. Doppler shift of the starlight.
- C. temperature of the star.
- D. brightness of the starlight.
- E. thermal signature of the star.

9. A batter hits a long fly ball. Neglecting friction, which of the following statements is/are true?

- I. The time the ball is in free fall determines the horizontal distance it travels.

- II. The ball reaches its maximum velocity at the highest point of its flight.
- III. The upward velocity can never be greater than the horizontal velocity.

- A. I only
- B. II only
- C. I and III only
- D. II and III only
- E. I, II, and III

10. Electromagnetic induction occurs in a wire when a change occurs in the

- A. current in the wire.
- B. intensity of the electric field of the wire.
- C. voltage applied to the wire.
- D. magnetic field intensity applied to the wire.
- E. resistance is added to the wire.

11. Whether a substance is a solid, liquid or gas is determined by

- A. conductivity.
- B. number of protons.
- C. temperature.
- D. number of neutrons.
- E. resistively.

12. A pile of 11 books weighing 2 N each is sitting on a table. With what total force does the table push back on the books?

- A. 2N
- B. 11N
- C. 22N
- D. 33N
- E. 44N

13. Which of the following statements best describes the relationship between two objects that are in thermal equilibrium?

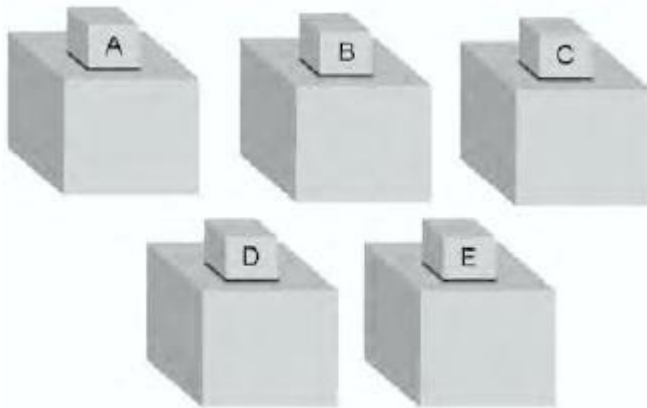
- A. Their masses are equal.

- B. Their volumes are equal.
- C. Their density is equal.
- D. Their heat content is equal.
- E. Their temperatures are equal.

14. Two vectors X and Y are added together. Which of the following statements could be true?

- I. The resultant magnitude is smaller than X .
- II. The resultant magnitude is larger than Y .
- III. The resultant direction is the same as either X or Y .

- A. I only
- B. II only
- C. I and III only
- D. II and III only
- E. I, II, and III



15.

Five blocks having equal mass but made of different substances, as shown above, are heated to 100°C and placed on separate 10 kg blocks of ice that are at a temperature of 0°C . Which substance melts the greatest amount of ice?

- A. The substance with the lowest specific heat.
- B. The substance with the highest specific heat.
- C. The substance with the greatest surface area.
- D. The substance with the smallest surface area.
- E. The substance that started with the highest temperature.