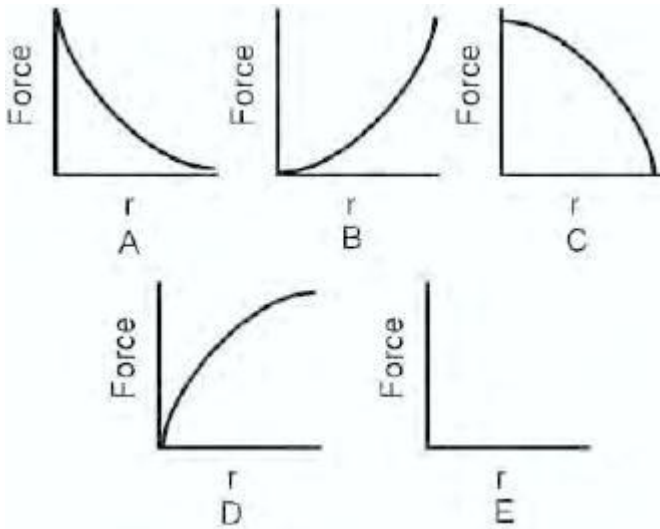


SAT Physics Practice Paper 40

1. The most notable difference between a radio wave and a light wave is

- A. speed.
- B. refractive index.
- C. reflectivity.
- D. amplitude.
- E. frequency.



2.

Which of the graphs above shows two electrons as they separate from one another?

- A. Graph A
- B. Graph B
- C. Graph C
- D. Graph D
- E. Graph E

3. During a pool game the cue ball is shot at the red ball. When the cue ball strikes the red ball, the cue ball stops dead, and the red ball moves away at the same velocity the cue ball had before the collision. The type of collision represented in this example is

- A. an elastic collision.
- B. a perfectly inelastic collision.
- C. an inelastic collision.
- D. all of the above.

E. none of the above.

4. The images formed by convex mirrors

A. are always real.

B. are always virtual.

C. are only real when the object is placed outside the radius of curvature.

D. are only virtual when the object is placed inside the focal point.

E. None of the above describes the images formed by convex mirrors.

5. Two different light bulbs are in a DC circuit powered by an 18 V battery as its power source. The two bulbs are rated at 4.5 watts (B_1) and 6.75 watts (B_2) each. What are the resistances of the two light bulbs (B_1) and (B_2)?

A. B_1 is 48 Ω , and B_2 is 72 Ω .

B. B_1 is 72 Ω , and B_2 is 48 Ω .

C. B_1 is 2.67 Ω , and B_2 is 4 Ω .

D. B_1 is 4 Ω , and B_2 is 2.67 Ω .

E. B_1 is 20.25 Ω , and B_2 is 45.56 Ω .

6. Scientists can determine whether a star is approaching the earth by looking at its

A. red shift.

B. blue shift.

C. rate of shimmer.

D. brightness.

E. absolute magnitude.

7. The volt is a measure of electrical potential and may be defined as

A. opposition to electrical motion.

B. number of particles in motion.

C. work per unit charge.

D. field strength per unit of force.

E. electrostatic discharge.

8. A laboratory centrifuge starts from rest and reaches a rotational speed of 8,000 radians/sec in a time of 25 seconds. What is the angular acceleration of the centrifuge?

A. 160 radians/sec²

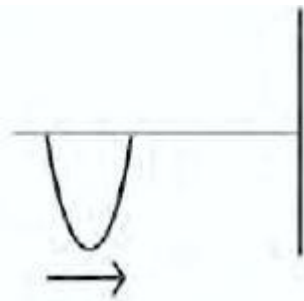
- B. 320 radians/sec²
- C. 640 radians/sec²
- D. 10,000 radians/sec²
- E. 20,000 radians/sec²

9. An object at rest is placed into free fall at a height of 20 m. What is the velocity of the object when the *PE* equals the *KE*?

- A. 8 m/s
- B. 11 m/s
- C. 14 m/s
- D. 17 m/s
- E. Velocity cannot be determined.

10. A battery and a variable resistor are in series with a small fan. A switch is closed, and the fan runs. When the variable resistor is moved slightly to the left, the fan slows down a little. When the variable resistor is moved slightly to the right, the fan speeds up a little. The following question is about the operation of the circuit described. If the variable resistor in the circuit is set all the way to the right, what happens in the circuit?

- I. The fan runs faster.
 - II. The voltage decreases.
 - III. The current increases.
- A. I only
 - B. II only
 - C. I and III only
 - D. II and III only
 - E. I, II, and III



11.

A pulse on a string moves toward and strikes a fixed end as shown. The pulse is

- A. reflected and transmitted.
- B. reflected and refracted.
- C. reflected and reduced.
- D. reflected and magnified.
- E. reflected and inverted.

12. A thrown baseball hits and breaks a glass window and ends up inside the house. Which of the following is correct about the ball?

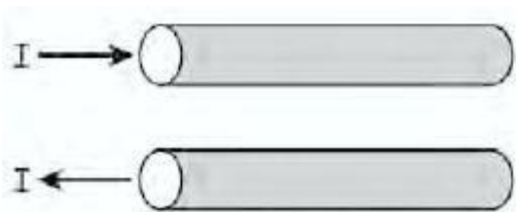
- A. The force the ball exerted on the window was larger than the force the window exerted on the ball.
- B. The force the ball exerted on the window was smaller than the force the window exerted on the ball.
- C. The force the ball exerted on the window was the same as the force the window exerted on the ball.
- D. Since the ball broke the window, it didn't lose any momentum.
- E. The kinetic energy the ball had before it broke the window equaled the kinetic energy the ball had after it broke the window.

13. When a voltage source that is inducing voltage into a large number of coils is disconnected, and a switch that is in series with the coils of wire is also opened, a spark is observed to jump across the switch terminals as the switch begins to open up. What is the cause of this spark?

- A. Free electrons from the voltage source
- B. Free electrons from the coils of wire
- C. Collapse of the magnetic field in the coils of wire
- D. Secondary electron flow from the source
- E. Stored voltage in the coils of wire

14. Electrical energy is changed into mechanical energy in a device called a/an

- A. electromagnet.
- B. generator.
- C. magnetron.
- D. motor.
- E. transformer.



15.

Two wires are aligned side by side as shown above. They are both hooked into different circuits in which the current is off. A switch is closed, allowing current to flow into each circuit. Which of the following statements is correct?

- A. The two currents destructively interfere with one another.
- B. The two currents constructively interfere with one another.
- C. The two wires attract and move closer.
- D. The two wires repel and move away.
- E. The two wires remain still.