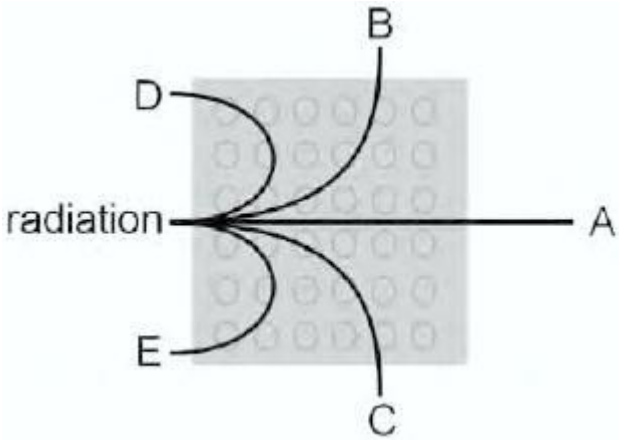
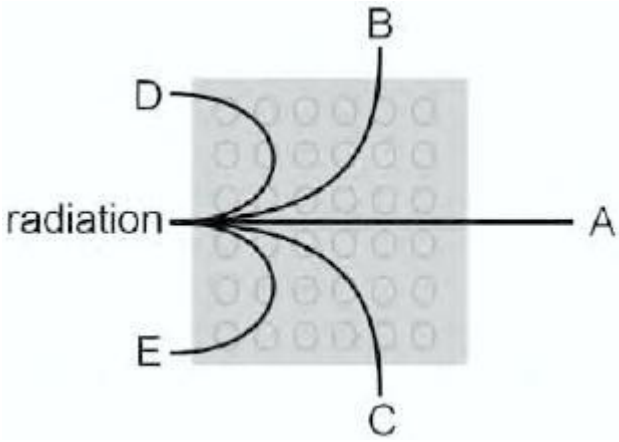
SAT Physics Practice Test 27
Part A

1. 

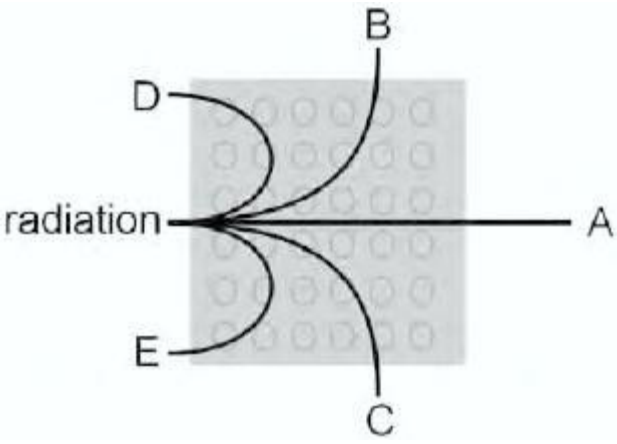
Which line shows the path of alpha radiation in a magnetic field?

A. A
B. B
C. C
D. D
E. E

2. 

Which line shows the path of beta radiation in a magnetic field?

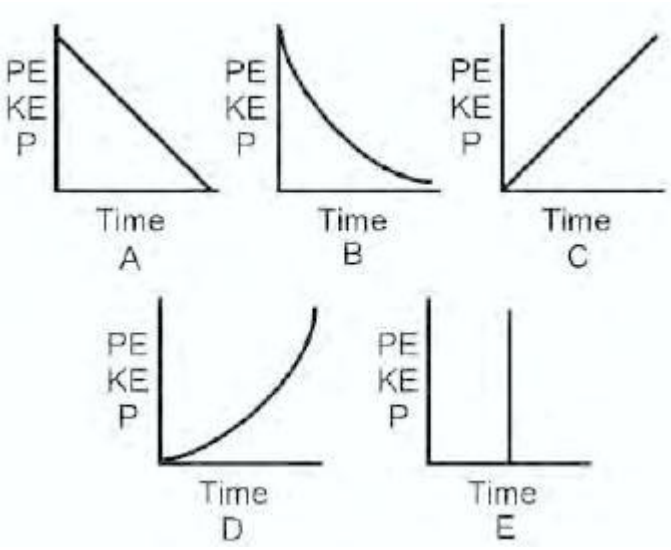
A. A
B. B
C. C
D. D
E. E



3.

Which line shows the path of gamma radiation in a magnetic field?

A. A
B. B
C. C
D. D
E. E

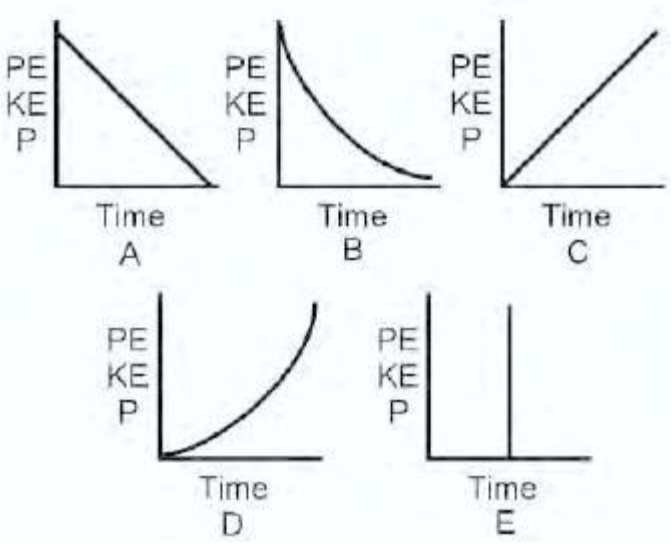


4.

An object free falls 15m from the top of a ladder. Select the graph that best describes the following quantities during the fall.

The potential energy of the object

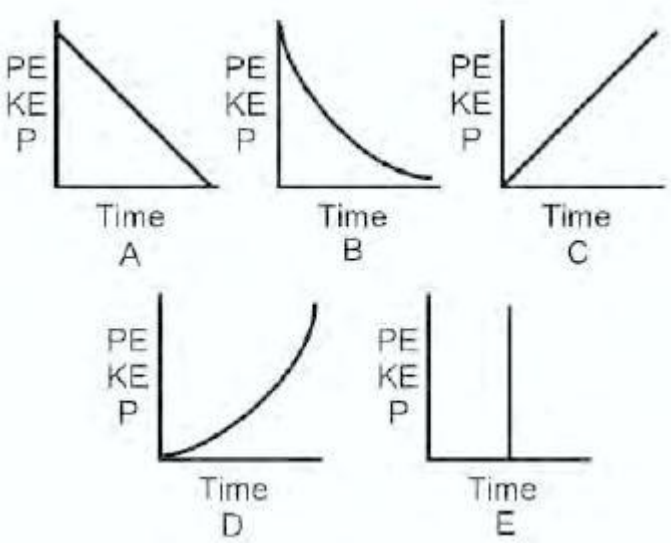
A. A
B. B
C. C
D. D
E. E

5. 

An object free falls 15m from the top of a ladder. Select the graph that best describes the following quantities during the fall.

The kinetic energy of the object

A. A
B. B
C. C
D. D
E. E

6. 

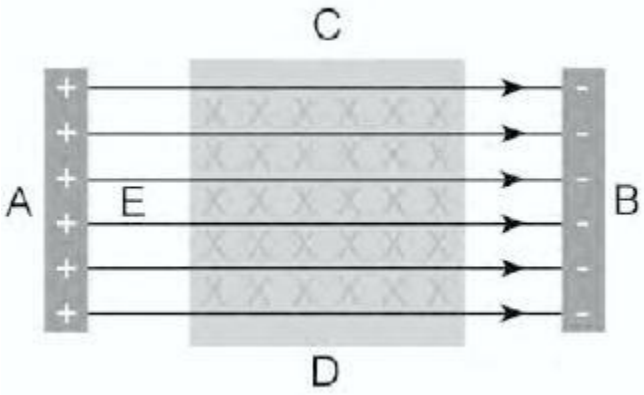
An object free falls 15m from the top of a ladder. Select the graph that best describes the following quantities during the fall.

The momentum of the object

A. A
B. B
C. C

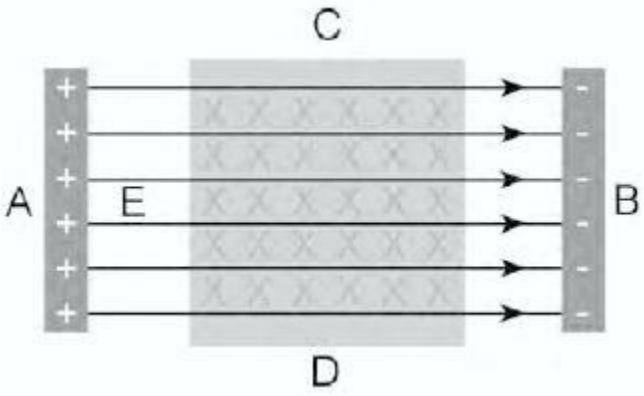
D. D
E. E

7. This question relates to particles placed in the electric field shown below.



A particle is placed into the electric field (E),which has a magnetic field superimposed on it as shown. Where in the electric field will the three particles named below be located after a short period of time if they start at Point E?
The particle is a proton.
A. A
B. B
C. C
D. D
E. E

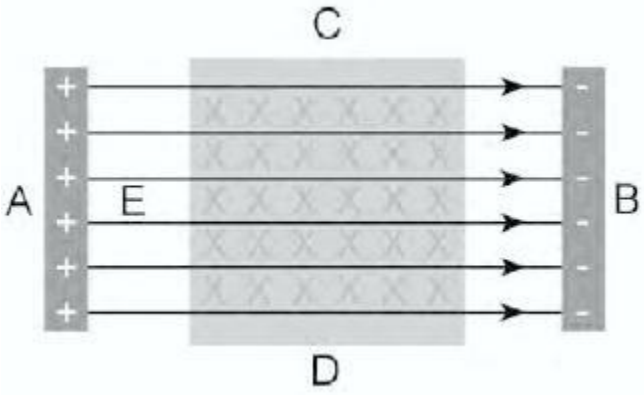
8. This question relates to particles placed in the electric field shown below.



A particle is placed into the electric field (E), which has a magnetic field superimposed on it as shown. Where in the electric field will the three particles named below be located after a short period of time if they start at Point E?
The particle is a neutron.
A. A
B. B
C. C
D. D

E. E

9. This question relates to particles placed in the electric field shown below.



A particle is placed into the electric field (E), which has a magnetic field superimposed on it as shown. Where in the electric field will the three particles named below be located after a short period of time if they start at Point E?
The particle is an electron.
A. A
B. B
C. C
D. D
E. E

10. This question relates to the electron energy level diagram below. The questions are about a hydrogen electron located at E_3.

$-.38eV$ _____ $n=6$
$-.54ev$ _____ $n=5$
$-.85eV$ _____ $n=4$
$-1.52eV$ _____ $n=3$
$-3.39eV$ _____ $n=2$
$-13.6eV$ _____ $n=1$

What is the emission energy when it moves to E_2?
A. +66eV
B. +.98eV
C. -1.87eV
D. -10.2eV
E. +12.08eV

11. This question relates to the electron energy level diagram below. The questions are about a hydrogen electron located at E_3.

$-.38eV$ _____ $n=6$

$-.54ev$ _____ $n=5$

$-.85eV$ _____ $n=4$

$-1.52eV$ _____ $n=3$

$-3.39eV$ _____ $n=2$

$-13.6eV$ _____ $n=1$

What is the absorbed energy when it moves to E_5?

A. +66eV
B. +.98eV
C. -1.87eV
D. -10.2eV
E. +12.08eV

12. This question relates to the electron energy level diagram below. The questions are about a hydrogen electron located at E_3.

$-.38eV$ _____ $n=6$

$-.54ev$ _____ $n=5$

$-.85eV$ _____ $n=4$

$-1.52eV$ _____ $n=3$

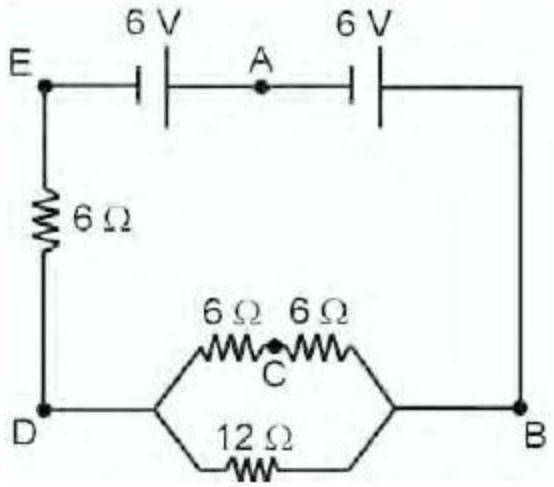
$-3.39eV$ _____ $n=2$

$-13.6eV$ _____ $n=1$

What is the emission energy when it moves to E_1?

A. +66eV
B. +.98eV
C. -1.87eV
D. -10.2eV
E. +12.08eV

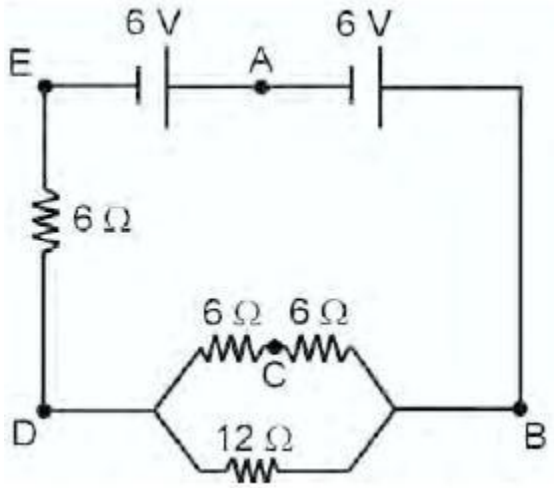
13. This question relates to the electric circuit below



Through which point does half the total current pass?

A. A
B. B
C. C
D. D
E. E

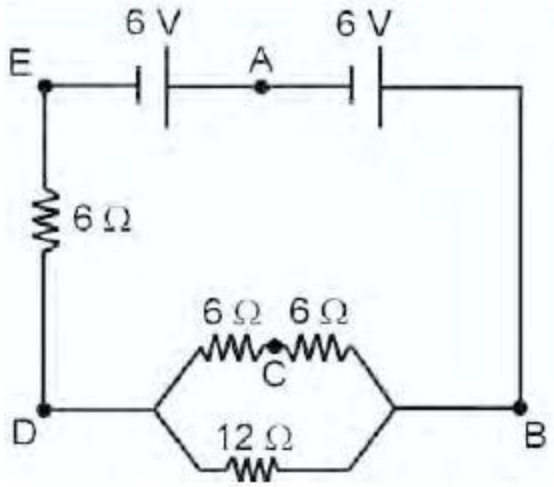
14. This question relates to the electric circuit below



At which point is all the voltage in the circuit dropped to zero?

A. A
B. B
C. C
D. D
E. E

15. This question relates to the electric circuit below



At which point is the voltage halved?
A. A
B. B
C. C
D. D
E. E

Part B

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.

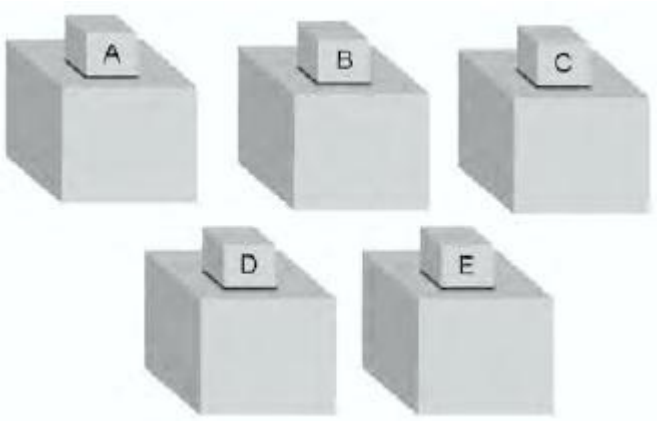
11. Whether a substance is a solid, liquid or gas is determined by
A. conductivity.
B. number of protons.
C. temperature.
D. number of neutrons.
E. resistively.

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.