PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET TEST 64

Physics

1. 1 mg radium has 2.68×10^{18} atoms. Its half-life is 1620 years. How many radium atoms will

disintegrate from 1 mg of pure radium in 3240 years ?

A. 2.01×10^9

B. 2.01×10^8

C. 1.01×10^9

D. 1.01×10^8

Answer: B

Watch Video Solution

2. Electron in hydrogen atom first jumps from third excited state to second excited state and then form second excited state to first excited state. The ratio of wavelength $\lambda_1 : \lambda_2$ emitted in two cases is

A. $\frac{7}{5}$

B. $\frac{27}{20}$

C. $\frac{27}{5}$

D. $\frac{20}{7}$

Answer: D

Watch Video Solution

3. Two blocks of msses 10 kg and 30 kg are placed along a vertical line. The first block is raised through a height of 7 cm. By what distance should the second mass be moved to raise the centre of mass by 1 cm?

A. 1 cm up

B. 1 cm down

C. 2 cm down

D. 2 cm up

Answer: B

Watch Video Solution

4. A body of mass m_1 moving with an unknown velocity of $v_1\hat{i}$ undergoes a collinear collision with a body of mass m_2 moving with a velocity $v_2\hat{i}$. After collision, m_1 and m_2 move with velocities of $v_3\hat{i}$ and $v_4\hat{i}$

respectively. If $m_2 = 0.5m_1$ and $v_3 = 0.5v_1$ then v_1 is:

A. $v_4 - \frac{v_2}{4}$

B. $v_4 - \frac{v_2}{2}$

C. $v_4 + v_2$

D. $v_4 - v_2$

Answer: D

Watch Video Solution

5. The speed of a particle moving in a circle of radius $r = 2m$ varies witht time t as $v = t^2$, where t is in second and v in m/s. Find the radial, tangential and net acceleration at $t = 2s$.

A. $\sqrt{80}ms^{-2}$

B. $\sqrt{90}ms^{-2}$

C. $\sqrt{120}ms^{-2}$

D. $\sqrt{70}ms^{-2}$

Answer: A

Watch Video Solution

6. An electric fan has blades of length $30cm$ as measured from the axis of rotation. If the fan is rotating at 1200 rpm, find the acceleration of a point on the tip of a blade.

A. $1600ms^{-2}$

B. $4740ms^{-2}$

C. $2370ms^{-2}$

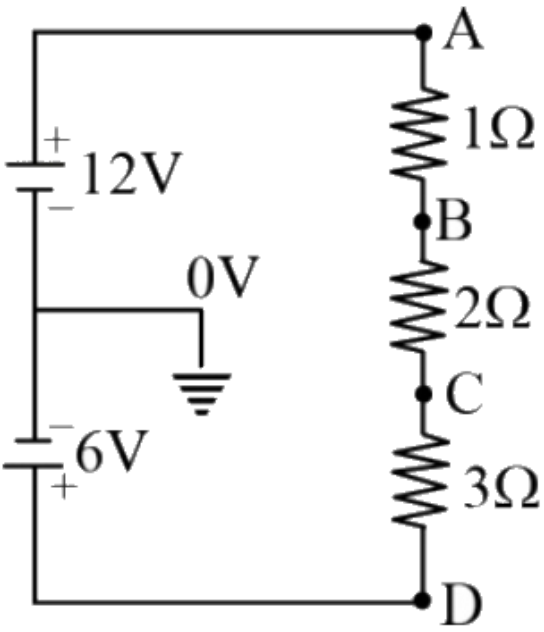
D. $5055ms^{-2}$

Answer: B

Watch Video Solution

7. In the circuit diagram shown in Figure , the potentials of the points B, C and D are

respectively -



A. 12V, 10V, 6V

B. 11V, 9V, 6V

C. 11V, 9V, 0V

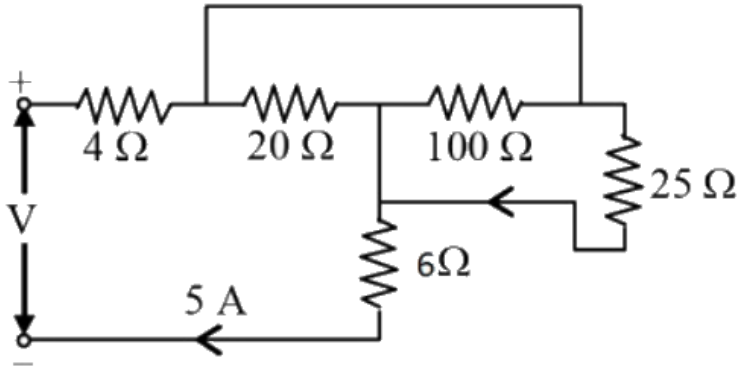
D. 12V, 10V, 0V

Answer: B

Watch Video Solution

8. In the circuit shown in the figure , V must be

-



A. 50 V

B. 100 V

C. 75 V

D. 25 V

Answer: B

Watch Video Solution

9. If the current through an inductor of 2 H is given by $I = t \sin tA$, then the voltage across the inductor is

A. $\cos t + t \sin t$

B. $2t \cos t + 2 \sin t$

C. $t \cos t + \sin t$

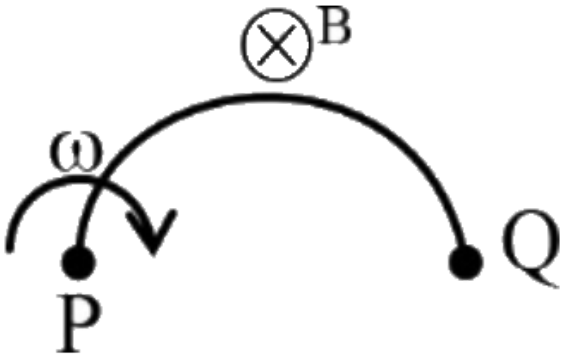
D. $2t \sin t + 2 \cos t$

Answer: B

Watch Video Solution

10. A wire is bent to form a semicircle of the radius a. The wire rotates about its one end with angular velocity ω . Axis of rotation is

perpendicular to the plane of the semicircle . In the space , a uniform magnetic field of induction B exists along the aixs of rotation as shown in the figure . Then -



A. The potential difference between P and Q is equal to $2B\omega a^2$

B. Potential difference between P and Q is equal to $2\pi^2 B\omega a^2$

C. P is at higher than Q

D. None of these

Answer: A

Watch Video Solution

11. Three point charges of $+2q, +2q$ and $-4q$ are placed at the corners A, B and C of an equilateral triangle

ABC of side x. The magnitude of the electric dipole moment of this system is

A. 2 qx

B. $3\sqrt{2}qx$

C. 3 qx

D. $2\sqrt{3}qx$

Answer: D

Watch Video Solution

12. Which of the following is true about linear isotropic dielectric ?

A. Induced dipole moment of the linear isotropic dielectric is opposite to the direction of external electric field and proportional to the field strength

B. Induced dipole moment of the linear isotropic dielectric is in the direction of

the field and proportional to the field strength

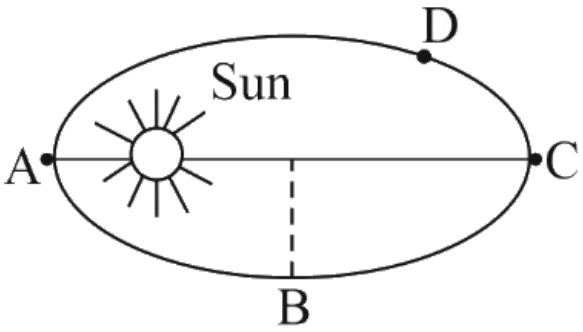
C. Induced dipole moment of the linear isotropic dielectric is perpendicular to the direction of external field and proportional to the field strength

D. Induced dipole moment of the linear isotropic dielectric is independent to the direction of external field and the field strength

Answer: B

Watch Video Solution

13. A planet revolves around the sun in an elliptical . The linear speed of the planet will be maximum at



A. D

B. B

C. A

D. C

Answer: C

Watch Video Solution

14. The radii of two planets are R_1 and R_2 ans their densities are ρ_1 and ρ_2 respectively. If g_1 and g_2 represent surfaces , then $\frac{g_1}{g_2}$ is

A. $\frac{\rho_1 R_2^2}{\rho_1 R_1^2}$

B. $\frac{\rho_1 R_2^1}{\rho_1 R_2^2}$

C. $\frac{\rho_2 R_1}{\rho_1 R_2}$

D. $\frac{\rho_1 R_1}{\rho_2 R_2}$

Answer: D

Watch Video Solution

15. If 150 J of energy is incident on area $2m^2$. If $Q_r = 15J$, coefficient of absorption is 0.6 , then amount of energy transmitted is

A. 50 J

B. 45 J

C. 40 J

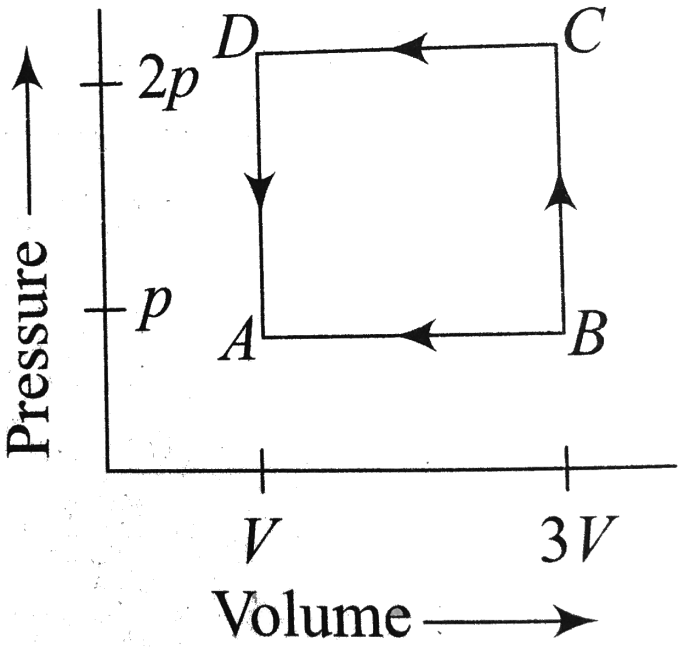
D. 30 J

Answer: B

Watch Video Solution

16. A thermodynamic system is taken through the cycle $ABCD$ as shown in the figure. Heat

rejected by the gas during the cycle is



A. 2PV

B. 4PV

C. $\frac{1}{2}PV$

D. PV

Answer: A

Watch Video Solution

17. The cofficient of performance of a refrigerator is 5. If the temperature inside freezer is $-20^{\circ}C$, the temperature of the surroundings to which it rejects heat is :

A. $41^{\circ}C$

B. $11^{\circ}C$

C. $21^{\circ}C$

D. $31^\circ C$

Answer: D

Watch Video Solution

18. A charge particle is moving in a uniform magnetic field ib a circular path. The energy of the particle is doubled . If the initial radius of he circular path was R, the radius of the new circular path after the energy is doubled will be

A. $\frac{R}{2}$

B. $\sqrt{2}R$

C. 2R

D. $\frac{R}{\sqrt{2}}$

Answer: B

Watch Video Solution

19. The magnetic field due to current carrying circular coil loop of radius 6 cm at a point on axis at a distance of 8 cm from the centre is

$54\mu T$. What is the value at the centre of loop

?

A. $75\mu T$

B. $125\mu T$

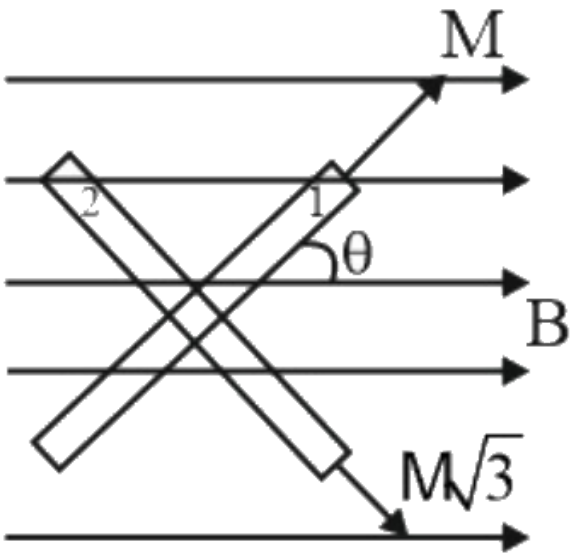
C. $150\mu T$

D. $250\mu T$

Answer: D

Watch Video Solution

20. Two short bar magnets of dipole moments M and $M\sqrt{3}$ are joined at right angles to form a cross as depicted in the figure . The value of θ for which the system remains in equilibrium in a uniform external magnetic field B, is



A. $\theta = 30^\circ$

B. $\theta = 45^\circ$

C. $\theta = 60^\circ$

D. $\theta = 15^\circ$

Answer: C

Watch Video Solution

21. A small body is dropped from a rising balloon. A person A stands on ground, while another person B is on the balloon.

Immediately, after the body is released, Choose the correct statement :

A. A and B , both feel that body is coming (going) down.

B. A and B , both feel that the body is going up

C. A feels that the body is coming down while B feels that the body is going up

D. A feels that the body is going up ,while B feels that the body is going down.

Answer: D

Watch Video Solution

22. The trajectory of a projectile in a vertical plane is $y = ax - bx^2$, where a and b are constant and x and y are, respectively, horizontal and vertical distances of the projectile from the point of projection. The maximum height attained by the particle and the angle of projectile from the horizontal are.

A. $\frac{b^2}{2a}, \tan^{-1}(b)$

B. $\frac{a^2}{b}, \tan^{-1}(2a)$

C. $\frac{a^2}{4b}, \tan^{-1}(a)$

D. $\frac{2a^2}{b}, \tan^{-1}(a)$

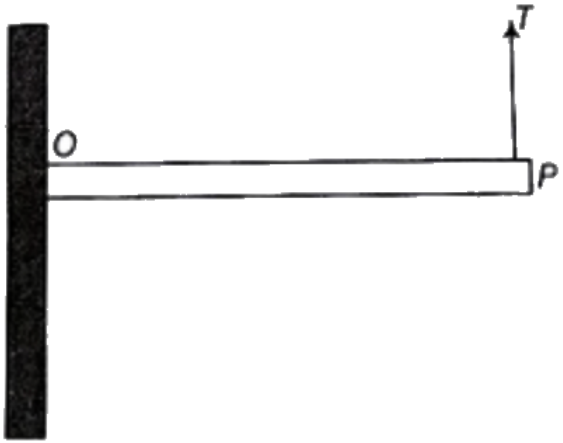
Answer: C

Watch Video Solution

23. A uniform rod of the length of 1 m and mass of 2 kg is attached to side support at O as shown in the figure. The rod is at

equilibrium due to upward force T acting at P .

Assume the acceleration due to gravity as $10ms^{-2}$ The value of T is



A. 0

B. 2 N

C. 5 N

D. 10 N

Answer: D

Watch Video Solution

24. A man stands on a weighing machine kept inside a lift. Initially the lift is ascending with the acceleration $'a'$ due to which the reading is W. Now the lift decends with the same acceleration and reading $10\,\%$ of initial. Find the acceleration of lift ?

A. $\frac{g}{19}$

B. $\frac{9g}{11}$

C. zero

D. g

Answer: B

Watch Video Solution

25. If the half-life of a radioactive sample is 10 hours its mean life is

A. 1.44 hours

B. 66.93 hours

C. 14.4 hours

D. 0.693 hours

Answer: C

Watch Video Solution

26. At any instant, the ratio of the amounts of two radioactive substance is $2:1$. If their half-lives be, respectively, $12h$ and $16h$, then after

two days, what will be the ratio of the substances?

A. $1:1$

B. $1:2$

C. $3:1$

D. $4:1$

Answer: A

Watch Video Solution

27. The simple harmonic motion of a particle is given by x = a sin $2\pi t$. Then, the location of the particle from its mean position at a time $1/8^{th}$ of second is

A. a

B. $\frac{a}{2}$

C. $\frac{a}{\sqrt{2}}$

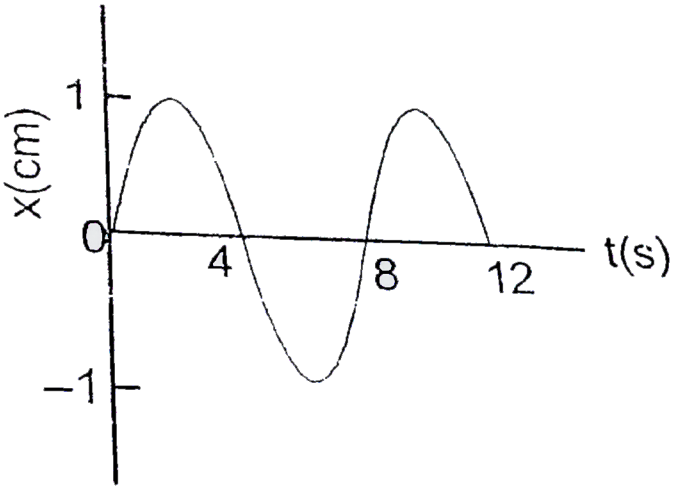
D. $\frac{a}{4}$

Answer: C

Watch Video Solution

Watch Video Solution

28. The $x - t$ graph of a particle undergoing simple harmonic motion is shown below. The accelertion of the particle at $t = 4/3s$ is



A. $\frac{\sqrt{3}}{32}\pi^2 cms^{-2}$

B. $-\frac{\pi^2}{32}cms^{-2}$

C. $\frac{\pi^2}{32} cms^{-2}$

D. $-\frac{\sqrt{3}}{32}\pi^2 cms^{-2}$

Answer: D

Watch Video Solution

29. Sodium and copper have work functions $2.3eV$ and $4.5eV$ respectively . Then the ratio of the wavelength is nearest

A. $1:2$

B. $4:1$

C. $2:1$

D. $1:4$

Answer: C

 Watch Video Solution

30. It takes 4.6 eV remove one of the least tightly bound electrons from a metal surface . When monochromatic photons strike energy

from zero to 2.2 eV are ejected . What is the energy of the incident photons ?

A. 2.4 eV

B. 2.2 eV

C. 6.8 eV

D. 4.6 eV

Answer: C

Watch Video Solution

31. A soap bubble of radius 'r' is blown up to form a bubble of radius 2r under isothemal conditions. If σ be the surface tension of soap solution , the energy spent in doing so is

A. $6\pi\sigma r^2$

B. $24\pi\sigma r^2$

C. $12\pi\sigma r^2$

D. $9\pi\sigma r^2$

Answer: B

Watch Video Solution

Watch video solution

32. There are two identical small holes of area of cross section a on the opposite sides of a tank containing liquid of density ρ. The differences in height between the holes is h. The tank is resting on a smooth horizontal surface. The horizontal force which will have to be applied on the tank to keep it in

equilibrium is

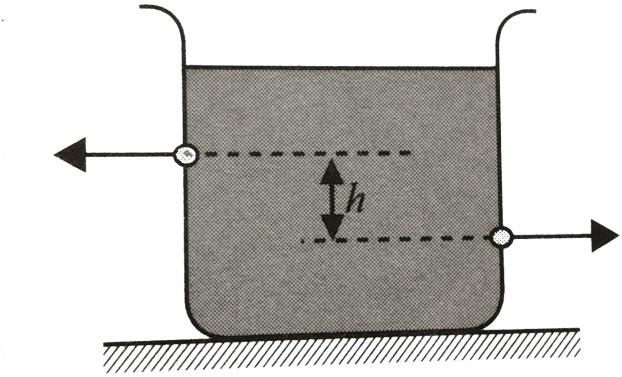


Fig. 4.184

A. $gh\rho a$

B. $\frac{2gh}{\rho a}$

C. $2pagh$

D. $\frac{\rho gh}{a}$

Answer: C

Watch Video Solution

33. The near point of a person is $50cm$ and the far point is $1.5m$. The spectales required for reading purpose and for seeing distant objects are respectively

A. $-2D$ and $+3D$

B. $+2D$ and $-3D$

C. $+2D$ and $-0.33D$

D. $-2D$ and $+0.33D$

Answer: C

Watch Video Solution

34. A ray of light is incident normally on a glass slab of thickness 5 cm and refractive index 1.6. The time taken to travel by a ray from source to surface of slab is same as to travel through glass slab. The distance of source from the surface is

A. 4 cm

B. 8 cm

C. 12 cm

D. 16 cm

Answer: B

Watch Video Solution

35. A particle of mass $m = 5$ units is moving with a uniform speed $v = 3\sqrt{2}$ units in the XY-plane along the $y = x + 4$. The magnitude of the angular momentum about origin is

A. Zero

B. 60 units

C. 7.5 units

D. $40\sqrt{2}$ units

Answer: B

Watch Video Solution

36. A ring starts to roll down the inclined plane of height h without slipping . The velocity when it reaches the ground is

A. $\sqrt{\frac{10gh}{7}}$

B. $\sqrt{\frac{4gh}{7}}$

C. $\sqrt{\frac{10gh}{3}}$

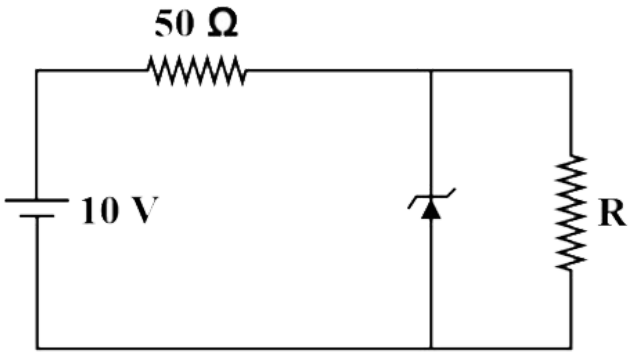
D. $\sqrt{gh}$

Answer: D

Watch Video Solution

37. The 6 V Zener diode shown in the figure has negligible resistance and a knee current of 5 mA. The minimum value of R (in Ω) so that

the voltage across it does not fall below 6 V is



A. 40

B. 60

C. 80

D. 120

Answer: C

Watch Video Solution

38. The voltage gain of an amplifier stage is 100. The gain expressed dB is :

A. 100

B. 20

C. 40

D. 10

Answer: B

Watch Video Solution

39. A bubble is at the bottom of the lake of depth h. As the bubble comes to sea level, its radius increases three times. If atmospheric pressure is equal to I metre of water column, then h is equal to

A. 26 l

B. l

C. 25 l

D. 30 l

Answer: A

Watch Video Solution

40. The time period of oscillation of a simple pendulum is given by $T = 2\pi\sqrt{l/g}$

The length of the pendulum is measured as $1 = 10 \pm 0.1$ cm and the time period as $T = 0.5 \pm 0.02s$. Determine percentage error in te value of g.

A. 5%

B. 8 %

C. 7 %

D. None of these

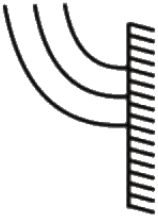
Answer: B

Watch Video Solution

41. Spherical wave fronts shown in figure,strike a plane mirror .reflected

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

42. In Young's double slit experiment intensity at a point is $\left(\frac{1}{4}\right)$ of the maximum intersity. Angular position of this point is

A. $\sin^{-1}\left(\frac{\lambda}{d}\right)$

B. $\sin^{-1}\left(\frac{\lambda}{2d}\right)$

C. $\sin^{-1}\left(\frac{\lambda}{3d}\right)$

D. $\sin^{-1}\left(\frac{\lambda}{4d}\right)$

Answer: C

Watch Video Solution

43. A tuning fork of known frequency $256Hz$ makes 5 beats per second with the vibrating string of a piano. The beat frequency decreases to 2 beats per second when the tension in the piano string is slightly increased. The frequency of the piano string before increasing the tension was

A. (256+2) Hz

B. (256-2) Hz

C. (256-5)Hz

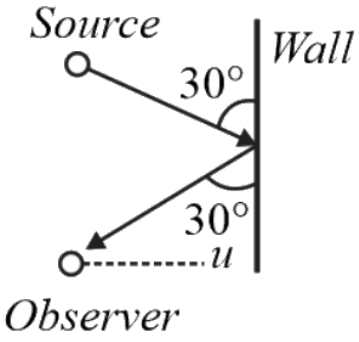
D. (256+5) Hz

Answer: C

Watch Video Solution

44. A stationary source (see figure) emits sound waves of frequency f towards a stationary wall. If an observer moving with speed u in a direction perpendicular to the wall measures a frequency $f' = \frac{11}{8} f$ at the

instant shown, then u is related to the speed of sound V_s as



A. $\frac{3}{4}V_s$

B. $\frac{3}{8}V_s$

C. $\frac{1}{4}V_s$

D. $\frac{8}{3}V_s$

Answer: A

Watch Video Solution

45. A body of mass $2kg$ is thrown up vertically with kinetic energy of $490J$. If $g = 9.8m/s^2$, the height at which the kinetic energy of the body becomes half of the original value, is

A. 50 m

B. 25 m

C. 12.5 m

D. 19.6 m

Answer: C

Watch Video Solution