PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 71

Physics

1. According to the Bohr model , what determines the shortest wavelength in a given series of wavelength emitted by the atom ?

A. The quantum number n_i that identifies the higher energy level from which the electron falls into a lower energy level.

B. The quantum number n_f that identifies the lower energy level into which the electron falls from a higher energy level.

C. The ratio n_f / n_i where n_f is the quantum number that identifies the lower energy level into which the electron falls and n_i is the quantum number that identifies the higher level from which the electron falls .

D. The sum $n_f + n_f$ of two quantum numbers, where n_f identifies the lower energy n_i identifies the higher level from which the electron falls .

Answer: B

Watch Video Solution

2. The frequency of X -rays, , Gamma rays and visible light wave rays are a, b and c respectively , then

A. $a < d, b > c$

B. $a < b, b < c$

C. $a > b > c$

D. $a > b, b > c$

Answer: A

Watch Video Solution

3. The position Vectors of two identical particles with respect to the origin in the three-dimensional coordinator system are $r_1 \text{ and } r_2$ The position of the centre of mass of the system is given by

A. $r_1 + r_2$

B. $2(r_1 + r_2)$

C. $r_1 - r_2$

D. $\frac{r_1 + r_2}{2}$

Answer: D

Watch Video Solution

4. two heading coils of resistances 10Ω and 20Ω are connected in parallel and connected to a battery of emf 12 V and internal resistance 1Ω Thele power consumed by the n are in the ratio

A. $1:4$

B. $1:3$

C. $2:1$

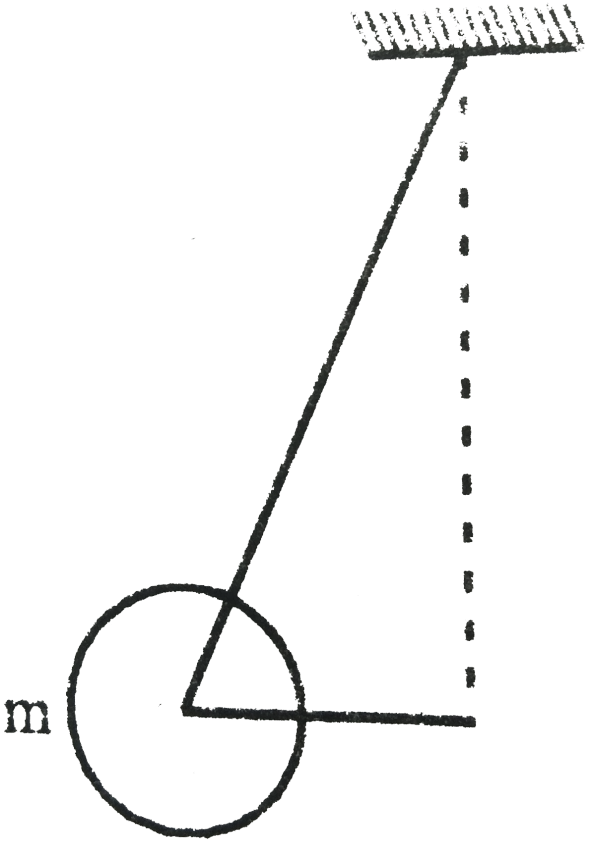
D. $4:1$

Answer: C

Watch Video Solution

5. A ball of mass $(m)0.5kg$ is attached to the end of a string having length $(L)0.5m$. The ball is rotated on a horizontal circular path about vertical axis. The maximum tension that the string can bear

is $324N$. The maximum possible value of angular velocity of ball (in radian//s) is -



A. 9

B. 18

C. 27

D. 36

Answer: D

Watch Video Solution

6. A body of mass 1 kg is rotating in a verticle circle of radius 1 m .What will be the difference in its kinetic energy at the top and bottom of the circle ? $\left(g = 10m/s^2\right)$

A. 10 J

B. 20 J

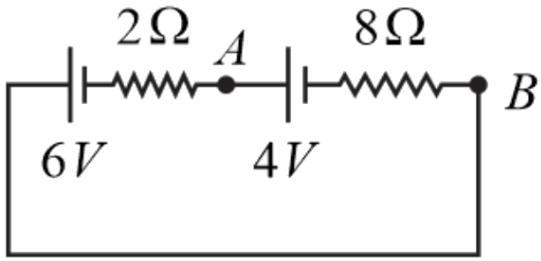
C. 30 J

D. 50 J

Answer: B

Watch Video Solution

7. Two potential difference between A and B in the following circuit is



A. 4 V

B. 5.6 V

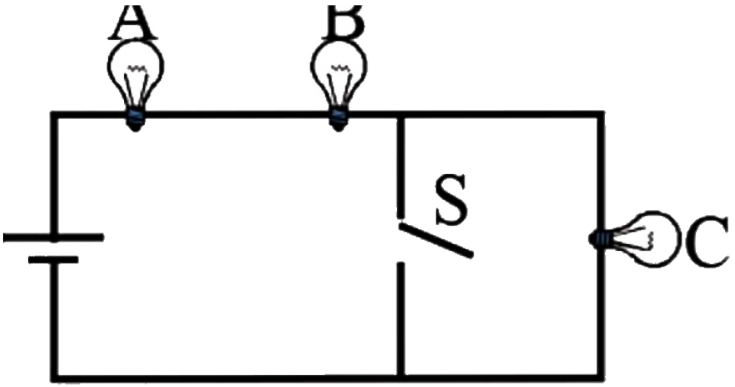
C. 2.8 V

D. 6 V

Answer: A

Watch Video Solution

8. A circuit consists of three identical lamps connected to a battery as shown in the figure. When the switch S is closed then the intensities of lamps A and B



A. will increase by eight times

B. will decrease by two times

C. will increase by more than two times

D. will remain the same

Answer: C

Watch Video Solution

9. A current of 5A is flowing at 220V in the primary coil of a transformer. If the voltage produced in the secondary coil is 2200V and 50% of power is lost, then the current in the secondary coil will be –

A. 0.25 A

B. 2.5 A

C. 0.5 A

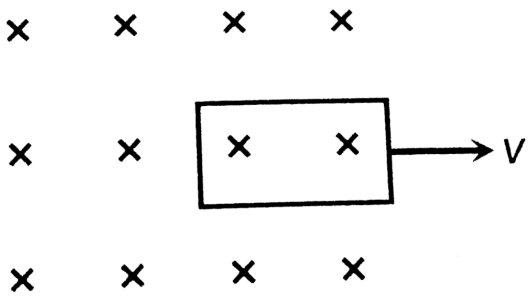
D. $5A$

Answer: A

Watch Video Solution

10. Figure show a square loop of side $0.5m$ and resistance 10Ω. The magnetic field has a magnitude $B = 1.0T$. The work done in pulling the loop out

of the field slowly and uniformly in $2.0s$ is



A. $3.125 \times 10^{-3} J$

B. $6.25 \times 10^{-4} J$

C. $1.25 \times 10^{-2} J$

D. $5.0 \times 10^{-4} J$

Answer: A

Watch Video Solution

11. Two positive ions , each carrying a charge q , are separated by a distance d.If F is the force of repulsion between the ions , the number of electrons missing from each ion will be (e being the charge on an electron)

A. $\frac{4\pi\varepsilon_0 F d^2}{e^2}$

B. $\sqrt{\frac{4\pi\varepsilon_0 F e^2}{d^2}}$

C. $\sqrt{\frac{4\pi\varepsilon_0 F d^2}{e^2}}$

D. $\frac{4\pi\varepsilon_0 F d^2}{q^2}$

Answer: C

Watch Video Solution

12. A hollow insulated conducting sphere is given a positive charge of $10\mu C$. What will be the electric field at the centre of the sphere it is radius is 2 metres ?

A. Zero

B. $5\mu Cm^{-2}$

C. $20\mu Cm^{-2}$

D. $8\mu Cm^{-2}$

Answer: A

Watch Video Solution

13. A particle is kept at rest at a distance R (earth's radius) above the earth's surface. The minimum speed with which it should be projected so that is does not return is

A. $\sqrt{\frac{GM}{4R}}$

B. $\sqrt{\frac{GM}{2R}}$

C. $\sqrt{\frac{GM}{R}}$

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

Answer: C

Watch Video Solution

Watch Video Solution

14. A car accelerates from rest at a constant rate for some time after which it decelerates at a constant rate β to come to rest. If the total time elapsed is t, the maximum velocity acquired by the car is given by :

A. $\left(\frac{\alpha^2 - \beta^2}{\alpha\beta}\right)t$

B. $\left(\frac{\alpha^2 + \beta^2}{\alpha\beta}\right)t$

C. $\frac{(\alpha + \beta)t}{\alpha\beta}$

D. $\frac{\alpha\beta t}{\alpha + \beta}$

Answer: D

Watch Video Solution

15. How is the temperature of stars determined by

A. Planck's law

B. Wien's displacement law

C. Rayleigh - jeans law

D. Kirchhoff's law

Answer: B

Watch Video Solution

16. Two moles of a certain ideal gas at 300K is cooled at constant volume so that the pressure is reduced to half the original value. Now the gas is heated at constant pressure so that its temperature becomes equal to the initial temperature. Find the total amount of heat absorbed by the gas in the process.

A. 150 R

B. 300 R

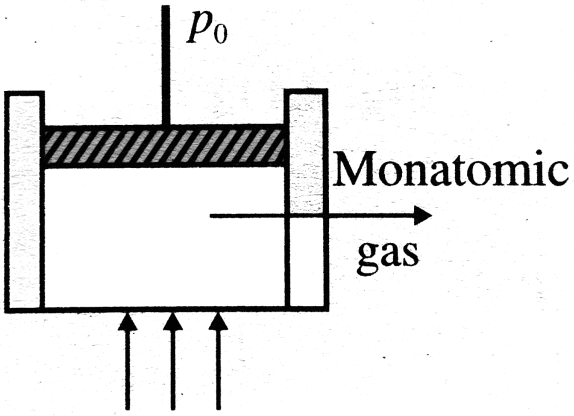
C. 75 R

D. 100 R

Answer: B

Watch Video Solution

17. If $50cal$ of heat is supplied to the system containing $2mol$ of an ideal monatomic gas, the rise in temperature is $(R = 2cal/mol - K)$



A. 50 K

B. 5 K

C. 10 K

D. 20 K

Answer: B

Watch Video Solution

18. A bar magnet is cut into two equal halves by a plane parallel to the magnetic axis of the following physical quantities the one which remains unchanged is

A. Pole strengths

B. Magnetic moment

C. Intensity of magnetization

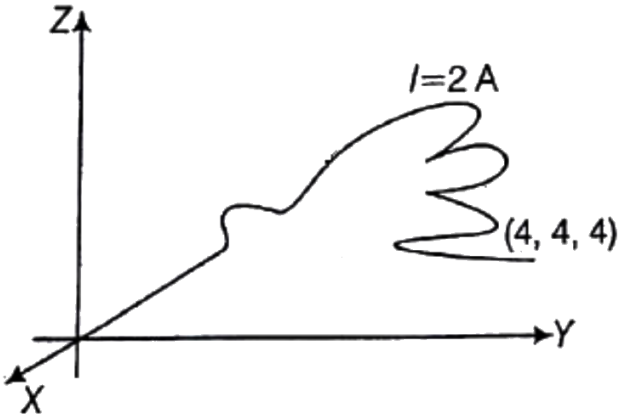
D. Moment of inertia

Answer: C

Watch Video Solution

19. A wire of arbitrary shape carries a current I = 2 A. Consider the portion of wire between (0,0,0) and (4,4,4) . A magnetic filled given by $\overrightarrow{B}. = \left(12 \times 10^{-4}\hat{i} + 2 \times 10^{-4}\hat{\hat{j}}\right)$ T exists in and

region . The force acting on the given portion the wire is



A. $\overrightarrow{F} = \left[\left(\hat{i} + \hat{j} + \hat{k}\right) \times \left(12\hat{i} + 12\hat{j}\right)\right] N$

B.

$\overrightarrow{F} = 8 \times 10^{-4}\left[\left(\hat{i} + \hat{j} + \hat{k}\right) \times \left(12\hat{i} + 12\hat{j}\right)\right] N$

C. Zero

D. None of the above

Answer: B

Watch Video Solution

20. The ratio of the magnetic fields due to small bar magnet in end position an broad side on position is (at equal distance from the magnet)

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. 1

D. 2

Answer: D

Watch Video Solution

21. A stone is released from an aeroplane which is rising with upward acceleration $5ms^{-2}$. Here $g = 10ms^{-1}$ The seconds after the release , the saparation between stone and aeroplane will be

A. 10 m

B. 20 m

C. 30 m

D. 25 m

Answer: C

 Watch Video Solution

22. An artillary piece which consistently shoots its shells with the same muzzle speed has a maximum range R. To hit a target which is $R/2$ from the gun and on the same level, the elevation angle of the gun should be

A. 15°

B. 45°

C. 30°

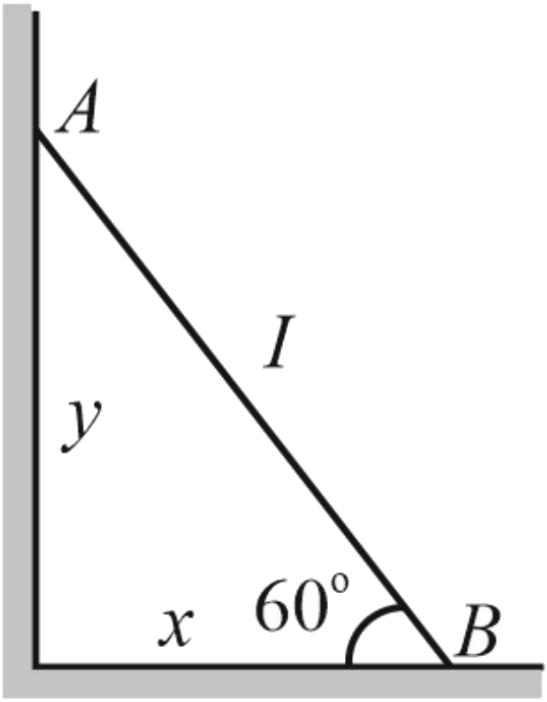
D. 60°

Answer: A

Watch Video Solution

23. A rod length AB is moving with ends remaining in contact with frictionless wall and floor . If at the instant shown , the velocity of the and B is $3ms^{-1}$ towards the negative x-direction , then the

magnitude of the velocity of the end A wll be



A. $3ms^{-1}$

B. $\sqrt{3}ms^{-1}$

C. $1.5ms^{-1}$

D. $2ms^{-1}$

Answer: B

Watch Video Solution

24. A block of mass 1 kg lies on a horizontal surface in a truck. The coefficient of static friction between the block and the surface is 0.6. If the acceleration of the truck is $5m/s^2$, the frictional force acting on the block is.....newtons.

A. 5 N

B. 2.5 N

C. 5.88 N

D. 9.8 N

Answer: A

Watch Video Solution

25. An alpha particle of energy $5MeV$ is scattered through 180° by a found uramiam nucleus . The distance of closest approach is of the order of

A. 5.3×10^{-12}

B. 5.3×10^{-13}

C. 5.3×10^{-14}

D. 5.3×10^{-15}

Answer: C

Watch Video Solution

26. The half-life of a radioactive sample is T. If the activities of the sample at time t_1 and t_2 $(t_1 < t_2)$ and R_1 and R_2 respectively, then the number of atoms disintergrated in time $t_2 - t_1$ is proportional to

A. $(R_1 - R_2)T$

B. $(R_1 + R_2)T$

C. $\frac{R_1 R_2}{R_1 + R_2} T$

D. $\frac{R_1 + R_2}{T}$

Answer: A

Watch Video Solution

27. The length of a magnet is large compared to its width and breadth. The time period of its oscillation in a vibration magnetometer is $2s$. The magnet is cut along its length into three equal parts and these parts are then placed on each

other with their like poles together . The time period of this combination will be

A. $\frac{2}{3}s$

B. $\sqrt{\frac{2}{3}}$

C. $\frac{2}{3}s$

D. $\sqrt{\frac{3}{2}}s$

Answer: A

Watch Video Solution

28. In a simple pendulum, the breaking strength of the string is double the weight of the bob. The bob is released from rest when the string is horizontal. The string breaks when it makes an angle θ with the vertical.

A. $\theta = \sin^{-1}\left(\frac{1}{3}\right)$

B. $\theta = 60^\circ$

C. $\theta = \cos^{-1}\left(\frac{2}{3}\right)$

D. $\theta = 0^\circ$

Answer: C

Watch Video Solution

29. A metallic surface ejects electrons when exposed to green light of intensity I but not when exposed to yellow light of intensity I. It is possible to eject electrons from the same surface by

(i) yellow light of some intensity which is more than I

(ii) green light of any intensity

(iii) red light of any intensity

(iv) violet light of any intensity

A. Yellow light of same intensity which is more than I

B. Green light of any intensity

C. Red light of any intensity

D. None of the above

Answer: B

Watch Video Solution

30. Light of energy 2.0 eV falls on a metal of work function 1.4 eV . The stopping potential is

A. 0.6 V

B. 2.0 V

C. 3.4 V

D. 1.4 V

Answer: A

Watch Video Solution

31. Hydraulic lift' works on the basis of

A. Stoke's law

B. Bernoulli's law

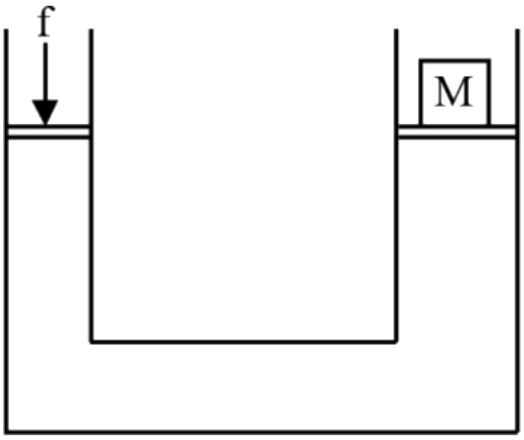
C. Pascal's law

D. Toricelli's law

Answer: C

Watch Video Solution

32. In hydraulic prees radii of connecting pipes , $r_1 And r_2$ in ratio 1 : 2 in order the lift a heavy mass M on larger piston , the small piston must be pressed thought a minimum force f equal to-



A. Mg

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

C. $\frac{Mg}{4}$

D. $\frac{Mg}{5}$

Answer: C

Watch Video Solution

33. An object is placed at a distance of 20 cm from the pole of a concave mirror of focal length 10 cm. The distance of the image formed is

A. $+20cm$

B. $+10Cm$

C. $-20cm$

D. $-10cm$

Answer: C

Watch Video Solution

34. Time taken by the sunlight to pass thought a slab of 4 cm and reflective index 1.5 is..... S.

A. 2×10^{10}

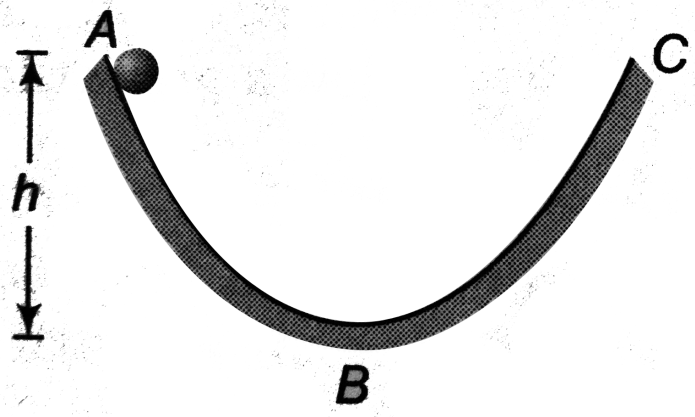
B. 2×10^{-8}

C. 2×10^{8}

D. 2×10^{-10}

Answer: D

Watch Video Solution



35.

A solid ball rolls down a parabolic path ABC from a height h as shown in figure. Portion AB of the path is rough while BC is smooth. How high will the ball climb in BC?

A. $H = \frac{5}{7}h$

B. $H = \frac{5}{2}h$

C. $H = \frac{7}{5}h$

D. $H = \frac{3}{7}h$

Answer: A

Watch Video Solution

36. A circular disc rolls down an inclined plane . The ratio of rotational kinetic energy to total kinetic energy is

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. $\frac{3}{4}$

Answer: B

Watch Video Solution

37. A p-n junction in series with a resistance of $5k\Omega$ is connected across a 50 V DC source . If the forward bias resistance of the junction is 50Ω , the forward bias current is

A. 1 mA

B. 2 mA

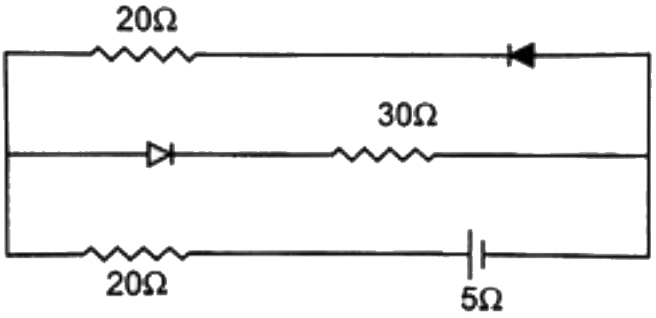
C. 20 mA

D. 9.9 mA

Answer: D

Watch Video Solution

38. Current in the given circuit will be



A. $\frac{5}{40}A$

B. $\frac{5}{50}A$

C. $\frac{5}{10}A$

D. $\frac{5}{20}A$

Answer: B

Watch Video Solution

39. What is the molar specific heat capacity of a gas undergoing an adiabatic process ?

A. Zero

B. 1

C. ∞

D. None of these

Answer: A

Watch Video Solution

40. Which of the following is dimensionless ?

A. $\frac{v^2}{rg}$

B. $\frac{v^2 g}{r}$

C. $\frac{vg}{r}$

D. v^2rg

Answer: A

Watch Video Solution

41. If there is zero absorption in the polaroid and if the intensity of plant-polarized light coming out of polaroid is A^2 , then the intensity of the incident beam will be

A. A^2

B. $\frac{A^2}{2}$

C. $2A^2$

D. None of these

Answer: C

Watch Video Solution

42. In Young's double slit experiment, one of the slit is wider than other, so that amplitude of the light from one slit is double of that from other slit. If I_m be the maximum intensity, the resultant intensity I when they interfere at phase difference ϕ is given by:

A. $\frac{I_m}{9}\left(1-8\cos^2.\frac{\phi}{2}\right)$

B. $\frac{I_m}{9}\left(1+8\cos^2.\frac{\phi}{2}\right)$

C. $\frac{I_m}{9}\left(1-8\cos^2\phi\right)$

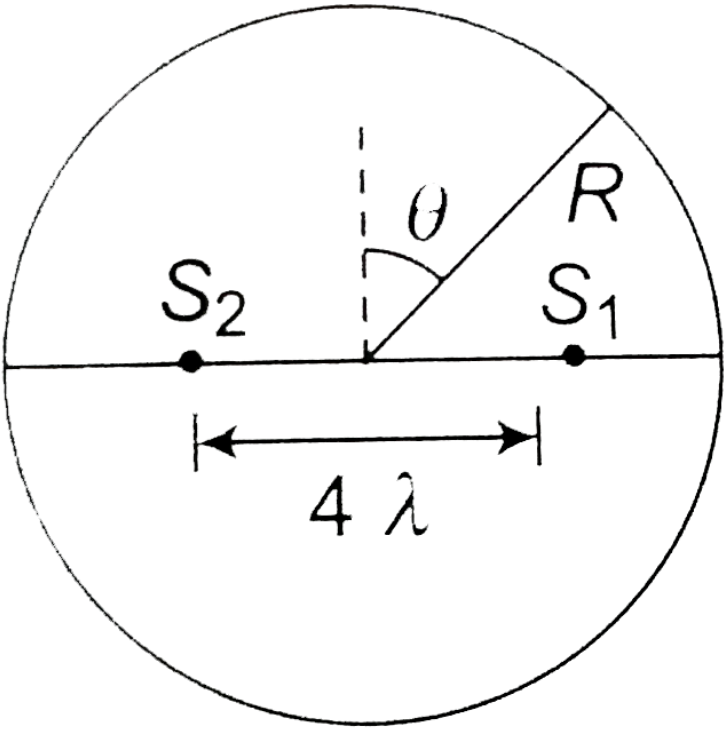
D. $\frac{I_m}{9}\left(1-\sin^2.\frac{\phi}{2}\right)$

Answer: B

Watch Video Solution

43. Two sources of sound are placed along the diameter of a circle of radius $R(R>>41)$. How many minima will be heard as one moves along the

perimeter of circle.



A. 16

B. 12

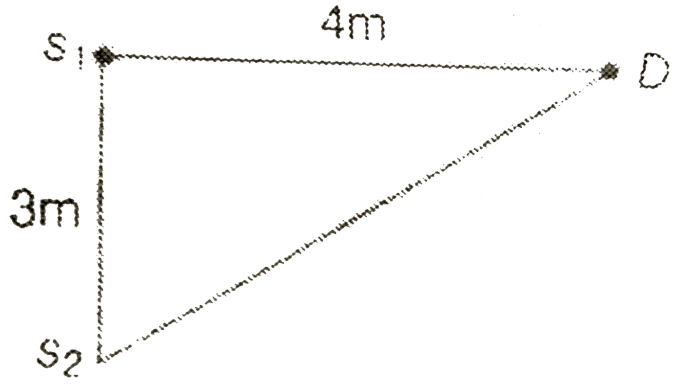
C. 4

D. 8

Answer: A

Watch Video Solution

44. In the figure , the intensity of waves arriving at D from two coherent soucrces s_1 and $s_2 is I_0$. The wavelength of the wave is $\lambda = 4m$. Resultant intensity at D will be



A. $4I_0$

B. I_0

C. $2I_0$

D. Zero

Answer: C

 Watch Video Solution

45. How much work must work be done by a force on 50 kg body in order to accelerate it in the direction of force from rest to $20ms^{-1}$ is 10 s?

A. $10^3 J$

B. $10^4 J$

C. $2 \times 10^3 J$

D. $4 \times 10^4 J$

Answer: B

 Watch Video Solution