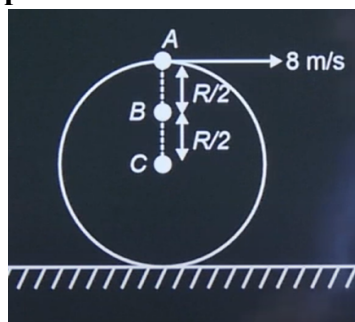


JEE-Main-04-04-2025 (Memory Based)

[EVENING SHIFT]

Physics

Question: A disc is performing pure rolling if speed of top point is 8 m/s. Find speed of point B.

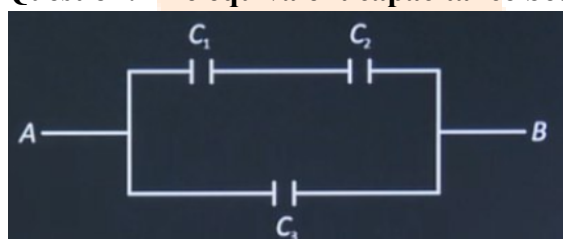


Options:

- (a) 2 m/s
- (b) 4 m/s
- (c) 6 m/s
- (d) 8 m/s

Answer: (c)

Question: The equivalent capacitance between A and B is

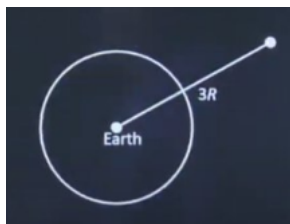


Options:

- (a) $\frac{C_1 C_2 + C_2 C_3 + C_1 C_3}{C_2 + C_3}$
- (b) $\frac{C_1 C_2 + C_1 C_3 + C_2 C_3}{C_1 + C_2}$
- (c) $\frac{2C_1 C_2 + C_2 C_3}{C_2 + C_3}$
- (d) $\frac{2C_2 C_3 + C_1 C_2}{C_1 + C_3}$

Answer: (b)

Question: A particle mass m is at a distance $3R$ from the centre of Earth. Find minimum kinetic energy of particle to leave Earth's field (R : Radius of Earth)



Options:

- (a) $\frac{mgR}{3}$
 (b) $3mgR$
 (c) $\frac{2}{3}mgR$
 (d) $\frac{mgR}{2}$

Answer (a)

Question: In a YDSE setup, the slits are separated by 1.5 mm and the distance between slits and screen is 2 m . On using light of wavelength 400 nm , it is observed that 20 Maximas of double slit experiment lie inside the central maxima of single slit diffraction. The width of each slit is _____ μm .

Answer: (150)

Question: Relative permittivity and Relative permeability of a medium is

$\epsilon_r = \frac{1}{0.0885}$ and $\mu_r = \frac{10}{\pi}$. Find the ratio of speed of light in vacuum to the speed of light in the given medium

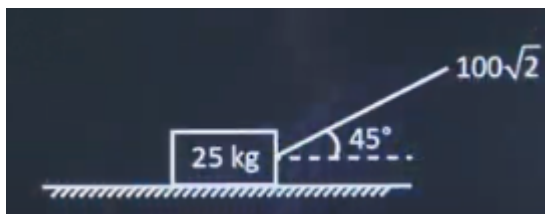
Options:

- (a) 6
 (b) 3
 (c) 4
 (d) 2

Answer: (a)

Question: If the displacement of the block is 5 m , the work done by force applied is

(coefficient of friction between block and surface is $\frac{1}{4}$)



Options:

- (a) $500\sqrt{2} \text{ J}$
 (b) 250 J

- (c) 100 J
(d) 500 J

Answer: (d)

Question: A wave with angular frequency of 628 rad/sec is moving at 300 m/s. Find its wavelength

Options:

- (a) 1
(b) 3
(c) 5
(d) 6

Answer: (b)

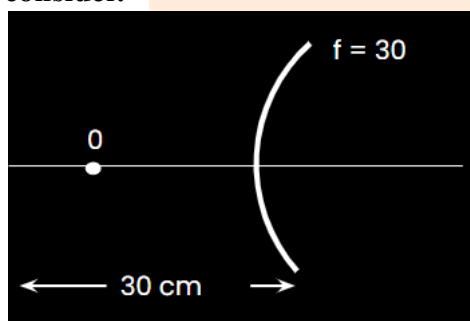
Question: The dimensional formula of the ratio of electrical dipole moment to the magnetic moment is $M^P L^Q T^R A^S$. Then P, Q, R and S are

Options:

- (a) 0, -1, 1, 0
(b) 0, 1, -1, 0
(c) 0, 1, 0, -1
(d) 0, 1, 0, 1

Answer: (a)

Question: An object O is kept at 30 cm from convex mirror of focal length of $f = 30$ cm as shown. Where to keep plane mirror so that image of plane mirror and convex mirror consider.



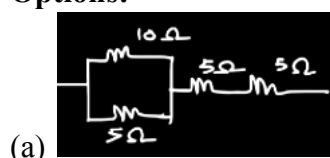
Options:

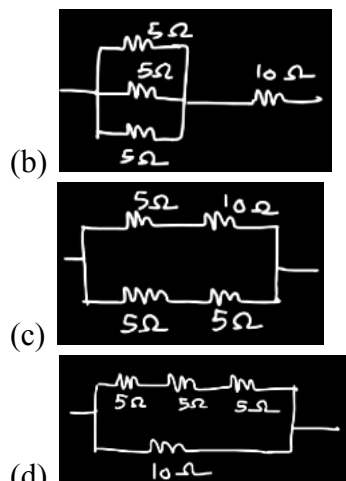
- (a) At 22.5 cm from o towards mirror
(b) At 15 cm from o towards mirror
(c) At 25 cm from o towards mirror
(d) At 10 cm from o towards mirror

Answer: (a)

Question: If three 5 ohm resistance and one 10 ohm resistance are available. From the following network of resistors which combination give 6 ohm resistance.

Options:





Answer: (c)

Question: There is a spherical drop of liquid of radius R which is rotating about its own axis. The liquid evaporates till the radius becomes $\frac{R}{2}$. Find the ratio of ω_1 & ω_2 . The density remains same throughout in both the cases.

Options:

- (a) $\frac{1}{32}$
 (b) $\frac{1}{16}$
 (c) $\frac{3}{16}$
 (d) $\frac{5}{8}$

Answer: (a)

Question: Two polarises P_1 & P_2 are aligned in such a way that intensity is zero. P_3 polarised is inserted between P_1 and P_2 such that final transmitted ray will have the maximum intensity. Find angle between P_1 and P_3 .

Options:

- (a) $\pi/4$
 (b) $\pi/2$
 (c) $\pi/3$
 (d) $\pi/8$

Answer: (a)

Question: Given below are two statements. One is labelled as Assertion (A) and the other is labeled as Reason (R).

Assertion (A): Plank's constant and linear momentum have same dimensions.

Reason (R): Bohr's angular momentum is integral multiple of $\frac{h}{2\pi}$.

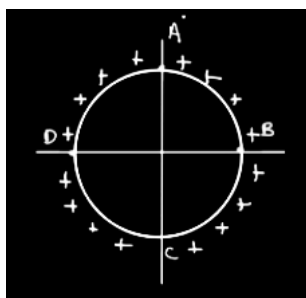
In the light of the above statements, choose the correct answer from the options given below:

Options:

- (a) (A) is false but (R) is true
- (b) (A) is true but (R) is false
- (c) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
- (d) Both (A) and (R) are true but (R) is the correct explanation of (A)

Answer: (a)

Question: A uniformly charged ring having linear charge density λ . If electric field due charge on quadrant AB at the center of the ring is E. Find electric field at same point due arc ABC.

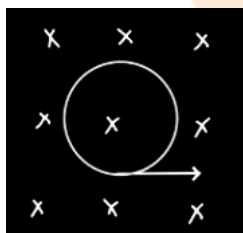


Options:

- (a) $2E$
- (b) E
- (c) $\sqrt{2} E$
- (d) $\sqrt{3} E$

Answer: (c)

Question: A charged particle of mass $16 \mu\text{g}$ and charge $1.6 \mu\text{C}$ gets a velocity in enters in a region of uniform and transverse magnetic field of 6.28 T Find time period of revolution of charged particle



Options:

- (a) 0.02 sec
- (b) 0.01 sec
- (c) 10 sec
- (d) 100 sec

Answer: (b)

Question: Match the column.

	Column-I		Column-II
a.	Adiabatic process	(i)	$W \propto \Delta T$

b.	Isochoric process	(ii)	$W = 0$
c.	Isobaric process	(iii)	$\Delta U + W = 0$
d.	Isothermal process	(iv)	$\Delta U = 0$

Options:

- (a) a(ii), b(iii), c(i), d(iv)
 (b) a(i), b(ii), c(iii), d(iv)
 (c) a(iii), b(ii), c(i), d(iv)
 (d) a(iii), b(ii), c(iv), d(ii)

Answer: (c)

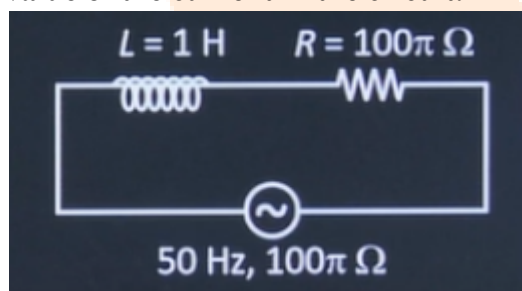
Question: n identical bulbs each takes power p when connected with main supply. If n bulbs are connected in series with main supply, then power will be

Options:

- (a) np
 (b) $\frac{p}{n^2}$
 (c) $\frac{p}{n}$
 (d) n^2p

Answer: (c)

Question: An ac source of 100π volt is connected to the given circuit. Find maximum value of the current in the circuit.

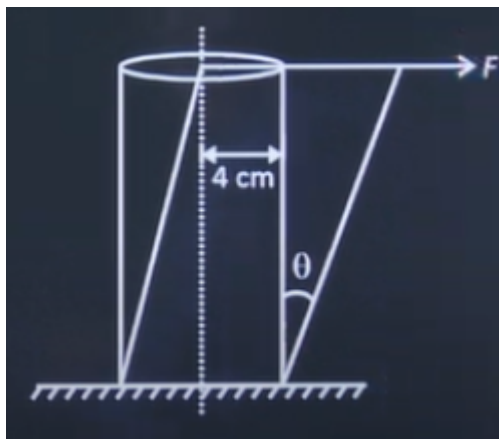


Options:

- (a) $\frac{1}{\sqrt{2}}\text{ A}$
 (b) 1 A
 (c) $\sqrt{3}\text{ A}$
 (d) 0.5 A

Answer: (b)

Question: A force $F = 10^5\text{ N}$ is applied on the cylinder as shown. If the shear modulus of the cylinder is 10^{10} N/m^2 find θ .



Options:

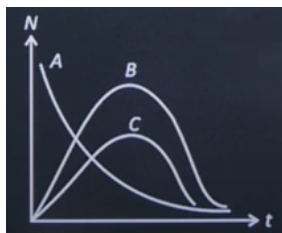
- (a) $\pi/160$
- (b) $1/160\pi$
- (c) $1/16\pi$
- (d) $\pi/16$

Answer: (b)

Question: In a successive nuclear decay, a sample of radioactive nuclei A decays into an unstable nuclei B which further disintegrates into a stable nuclei C. Which of the following graphs correctly represents the concentration of the nuclei as a function of time? (Assume concentration of B and C to be zero initially)

Options:

- (a)
- (b)
- (c)



(d)

Answer: (a)

Question: For n-type semi-conductor choose the correct option having correct statements

(i) $n_e \cdot n_n = n_i^2$

(ii) $n_e \cdot n_n \neq n_i^2$

(iii) Pentavalent impurity

(v) Additional are not generated

(iv) Electrons are majority carriers

Options:

(a) (ii), (iii), (iv)

(b) (i), (iii), (iv), (v)

(c) (i), (v) only

(d) (i), (iii), (iv)

Answer: (b)

Question: Two adiabatic containers A and B have volume in the ratio 1: 2. The pressure and temperature for gas in A is 8 kPa and 1000 K, and the corresponding values for B is 7 kPa and 500 K. If the containers are connected by a thin pipe and gases are allowed to mix thoroughly, the final temperature of the mixture is 600 K. The final pressure in the vessel is

Options:

(a) 7.6 kPa

(b) 7.8 kPa

(c) 7.4 kPa

(d) 7.2 kPa

Answer: (d)