

JEE-Main-03-04-2025 (Memory Based)
[EVENING SHIFT]
Physics

Question: The ratio of intensities of two coherent is 1 : 9. The ratio of the maximum to the minimum intensities is

Options:

- (a) 9:1
- (b) 16:1
- (c) 8:1
- (d) 4:1

Answer: (d)

Question: Excess pressure inside bubble A is half of that of bubble B. Find ratio of volume of bubble A to bubble B.

Options:

- (a) 8
- (b) 4
- (c) 27
- (d) 16

Answer: (a)

Question: In a resonance tube experiment at one end, resonance is obtained at two consecutive length $l_1 = 100$ cm and $l_2 = 14$ cm. If the frequency of the sound is 400 Hz, the velocity of sound is

Options:

- (a) 320 m/s
- (b) 340 m/s
- (c) 380 m/s
- (d) 300 m/s

Answer: (a)

Question: A magnetic dipole experiences a torque of $80\sqrt{3}$ Nm when placed in uniform magnetic field in such a way that dipole moment makes an angle of 60° with magnetic field. The potential energy of the dipole is

Options:

- (a) 90 J
- (b) 80 J
- (c) 70 J
- (d) 75 J

Answer: (b)

Question: Physical quantity S is given as $S = \frac{pq}{r^3\sqrt{t}}$. Find to percentage change in S if percentage change in p , q , r and t are 1, 1, 3 and 2 respectively.

Options:

- (a) 7%
- (b) 9%
- (c) 5%
- (d) 12%

Answer: (d)

Question: In a medium of refractive index 2, the frequency of light is 5×10^{14} Hz, the wavelength of the light is

Options:

- (a) 200 nm
- (b) 300 nm
- (c) 500 nm
- (d) 600 nm

Answer: (b)

Question: A capacitor $C_1 = 100$ pF is connected to a 60 V cell then disconnected. C_1 is now connected to an uncharged capacitor C_2 such that the final potential across C_1 becomes 20 V. Find C_2 .

Options:

- (a) 200 pF
- (b) 300 nF
- (c) 500 nF
- (d) 600 nF

Answer: (a)

Question: A block of mass 1 kg, moving along x axis with speed $v_i = 10$ m/s enters a rough region ranging from $x = 0.1$ m to $x = 1.9$ m. The retarding force acting on the block in this range is $F_r = -kx$ N, with $k = 1$ N/m. Then the final speed of the block as it crosses rough region is

Options:

- (a) 1 m/s
- (b) 2 m/s
- (c) 8 m/s
- (d) 10 m/s

Answer: (c)

Question: A bulb rated 100 W, 220 V connected to an ac supply of 220 V. Find peak current in the bulb.

Options:

- (a) 8 A
- (b) 0.64 A
- (c) 3.2 A
- (d) 2 A

Answer: (b)

Question: Statement-I: O^{2-} and H^+ are projected in a magnetic field perpendicular to the field with same speed. The radius of curvature of O^{2-} will be less than H^+ .

Statement-II: e^- and p^+ are projected in a magnetic field perpendicular to the field with same speed. The radius of curvature of e^- will be more the proton.

Options:

- (a) Statement-I is correct, statement-II is incorrect
- (b) Both statement-I and statement-II are correct
- (c) Both statement-I and statement-II are incorrect
- (d) Statement-I is incorrect, statement-II is correct

Answer: (c)

Question: The pressure of an ideal gas is increased by 0.4% keeping the volume constant. Find the initial temperature of the gas if there is a 1 °C rise in temperature.

Options:

- (a) 250 K
- (b) 250°C
- (c) 2500 K
- (d) 2500°C

Answer: (a)

Question: Match the List-I with the List-II.

A.	Boltzmann constant	I.	ML^2T^{-1}
B.	Coefficient of viscosity	II.	$MLT^{-3}K^{-1}$
C.	Planck's constant	III.	$ML^2T^{-2}K^{-1}$
D.	Thermal conductivity	IV.	$ML^{-1}T^{-1}$

Options:

- (a) (A - iii, B - iv, C - i, D - ii)
- (b) (A - ii, B - iv, C - i, D - iii)
- (c) (A - ii, B - i, C - iv, D - iii)
- (d) (A - iii, B - i, C - iv, D - iii)

Answer: (a)

Question: In a H^+ atom, electron makes transition from 4th excited state to a state with principal quantum number 'n' emitting photon of energy 2.86 eV. Then the value of n is _____

Options:

- (a) 3
- (b) 5
- (c) 2
- (d) 1

Answer: (c)

Question: If distance is given by $S = C_0(2 - t)^2 + c(2 - t)$. Find its acceleration.

Options:

- (a) $a = 2C_0$

- (b) $a = C_0(2 - t)$
- (c) $a = -2C_0$
- (d) $a = C_0 + C$

Answer: (a)

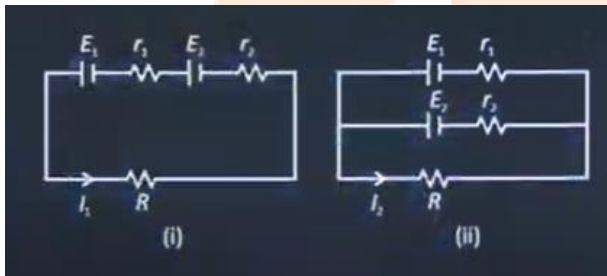
Question: For a projectile, range is 3 times the height. Given $R = \frac{nv^2}{25g}$ where v , speed of projection. Find the value of n .

Options:

- (a) 50
- (b) 34
- (c) 15
- (d) 24

Answer: (d)

Question: In two situations given in figures (i) and (ii) current through R is I_1 and I_2 respectively. If $E_1 = 2\text{ V}$, $r_1 = 1\Omega$, $E_2 = 1\text{ V}$, $r_2 = 2\Omega$, $R = 6\Omega$ then find $\frac{I_1}{I_2}$.

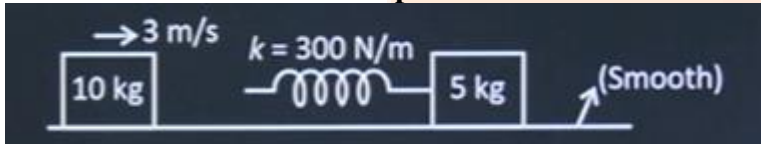


Options:

- (a) $3/4$
- (b) $4/3$
- (c) $9/4$
- (d) $4/9$

Answer: (b)

Question: A block of mass 10 kg is moving with speed 3 m/s collides with a spring connected to another block of mass 5 kg initially at rest. Find the compression in spring when both move with same speed.



Options:

- (a) 0.1 m
- (b) 0.2 m
- (c) 1 m
- (d) 2 m

Answer: (a)

Question: Two cylindrical vessels of equal cross sectional area of 2m^2 contain water upto heights 1 m and 6 m, respectively. If the vessels are connected at their bottom then the work done by the force of gravity is (Density of water is 10^3 kg/m^3 and $g = 10 \text{ m/s}^2$)

Options:

- (a) $8 \times 10^4 \text{ J}$
- (b) $8 \times 10^5 \text{ J}$
- (c) $7 \times 10^4 \text{ J}$
- (d) $7 \times 10^5 \text{ J}$

Answer: (a)

Question: **Statement 1:** Two charge particle having charge $-2e$ and $+e$ respectively enter in a region of uniform transverse magnetic field B with same momentum. Both particle move along a circular path with radii R_1 and R_2 respectively where $R_1 < R_2$.

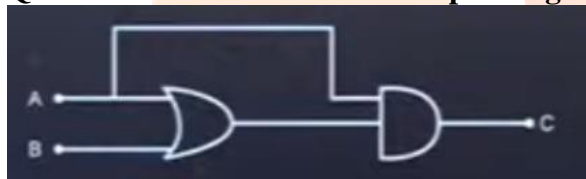
Statement 2: If a proton and an electron enter in a region of uniform transverse magnetic field B with same momentum. Both particle move along a circular path with radii R_1 and R_2 respectively where $R_p < R_e$

Options:

- (a) Both Statement I and Statement II are false
- (b) Statement I is true but Statement II are false
- (c) Both Statement I and Statement II are true
- (d) Statement I is false but Statement II is true

Answer: (b)

Question: The truth table corresponding to the circuit given below is:



Options:

(a)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(b)

A	B	Y
0	0	1
0	1	1
1	0	0
1	1	0

(c)

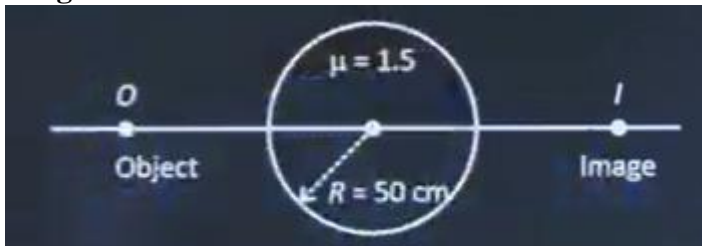
A	B	Y
0	0	0
0	1	0
1	0	1
1	1	1

(d)

A	B	Y
0	0	0
0	1	1
1	0	0
1	1	1

Answer: (c)

Question: Find the distance of the object from the left surface, if the distance of the final image from the left surface is 200 cm



Options:

- (a) 100 cm
- (b) 50 cm
- (c) 200 cm
- (d) 75 cm

Answer: (a)

