PAPER SOLUTION

From Meerut

JEE MAIN 2025

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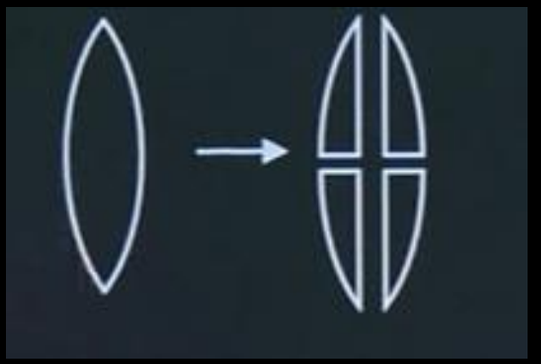
#Q. An equiconvex lens of focal length f, is cut into four parts as shown in the diagram. The focal length of each part is :



Ans. 2f

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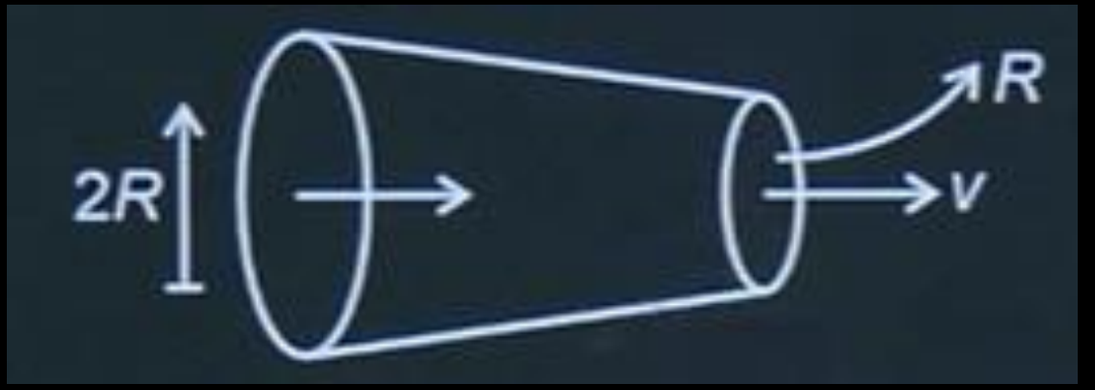
#Q. Radius of a tube decreases from 2 R to R in which ideal liquid is flowing at same level. speed at end is 2m/s as shown, find speed v at other end



(A) 4 m/s

(B) 1 m/s

(C) 2 m/s

(D) 8 m/s

Ans. (D)

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#Q. Statement-I : Simple pendulum is taken on a planet of mass 4 times of earth and radius 2 time of earth then the time period is remains constant
Statement -II : Time period of simple pendulum is constant on earth and on any other planet :

A Statement-I is correct and statement-II is incorrect

B Both statement-I and statement-II are correct

C Statement-I is incorrect and statement-II is correct

D Both statement-I and statement-II are incorrect

Ans. (A)

#Q. The dimensional formula of capacitance is :

A $[M^{-1}L^{2}T^{2}A^{-3}]$

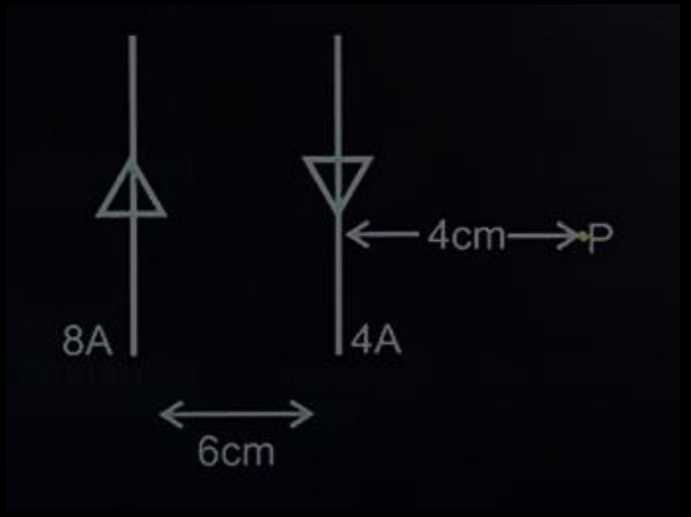
B $[M^{-1}L^{-2}T^{4}A^{3}]$

C $[M^{-1}L^{-2}T^{4}A^{2}]$

D $[M^{-1}L^{-2}T^{2}A^{2}]$

Ans. (C)

#Q. Find (B_{net}) at point P ?



Ans. 4μT

#Q. The maximum percentage error in the measurement of density of wire is :

$m = (0.60 \pm 0.003)g$

$r = (0.50 \pm 0.01)$ cm

$l = (10.00 \pm 0.05)$ cm

Ans. 9.5

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#Q. A proton is moving with uniform velocity of 2×10^8 m/s in uniform magnetic and electric fields which are perpendicular to each other. If electric field is switched off then proton moves in circular path of radius 1.6×10^{-5} m. Then magnetic field is

A 5×10^{-5} T

B 1.2×10^{5} T

C 2.5×10^{4} T

D 2.5×10^{2} T

Ans. (B)

#Q. The point A is situated on the axis of dipole at a distance ‘r’ from the dipole with E_0 and V_0 the electric field and electric potential at A. Find the electric field and potential at point B at distance ‘2r’ from dipole on its perpendicular bisector in terms of E_0 and V_0.

A $\frac{E_0}{16}, 0$

B $\frac{E_0}{8}, \frac{V_0}{2}$

C $\frac{E_0}{16}, \frac{V_0}{8}$

D $\frac{E_0}{8}, \frac{V_0}{4}$

Ans. (A)

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#Q. A projectile is thrown with a velocity 20 m/s at an angle of projection 60º from ground. find kinetic energy difference between point of projection and highest point, if mass of the particle is m.

Ans. 150m

#Q. The displacement of a particle moving under the action of a force $\vec{F} = 2\hat{\imath} + b\hat{\jmath} + \hat{k}$ is $\vec{d} = \hat{\imath} + \hat{\jmath} + \hat{k}$. Find the b if the work done by the force is zero.

A 0

B +3

C –3

D –1

Ans. (C)

#Q. Calculate the radius of first excited state of He ion (in Å)

Ans. 1.05 Å

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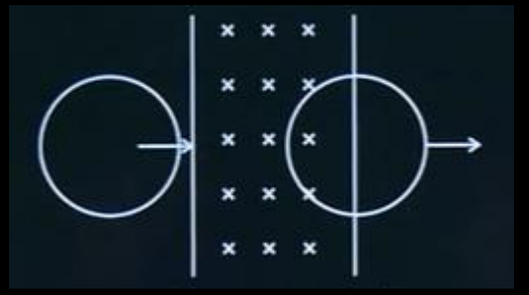
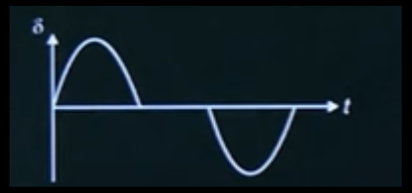
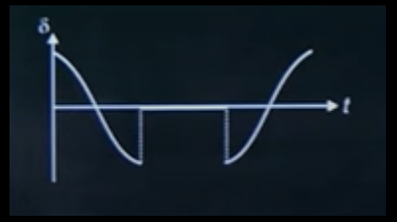
#Q. A conducting circular ring is moving with a constant velocity in a uniform magnetic field as shown. Identify the correct graph between induced emf vs time :



(A) 

(B) 

(C) 

(D) 

Ans. (A)

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#Q. **Statement –I : Fringe width of red light is more than fringe width of violet light.**
Statement–II : Fringe width is directly proportional to the wavelength lf light used.

A. Statement-I is correct and statement-II is incorrect

B. Both statement-I and statement-II are correct

C. Statement-I is incorrect and statement-II is correct

D. Both statement-I and statement-II are incorrect

Ans. (B)

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#Q. A force $\vec{F}= (\hat{\imath} + 2\hat{\jmath} - 3\hat{k})$N acts on point whose position vector is given as $\vec{r}= (2\hat{\imath} - 3\hat{\jmath} + 7\hat{k})$m. Find torque about origin.

A. $(+5\hat{\imath} - 12\hat{\jmath} + 7\hat{k})N.m$

B. $(-5\hat{\imath} - 12\hat{\jmath} + 8\hat{k})N.m$

C. $(-5\hat{\imath} + 13\hat{\jmath} + 7\hat{k})N.m$

D. $(-5\hat{\imath} + 13\hat{\jmath} - 7\hat{k})N.m$

Ans. (C)

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#Q. For a Diatomic gas if $\gamma_1 = C_p/C_v$ for rigid molecule and $\gamma_2 = C_p/C_V$ for another diatomic molecule having vibrational modes then

A $\gamma_2 > \gamma_1$

B $\gamma_2 < \gamma_1$

C $\gamma_2 = \gamma_1$

D $\gamma_2 = 2\gamma_1$

Ans. (B)

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#Q. Tube of length 1 m is completely filled with an ideal liquid of mass M. It is kept horizontal and is rotated by angular velocity ‘ω’ about one of its end point axis. If force ‘F’ is being experienced at another end point. Such that

w = $\sqrt{\frac{F}{\alpha M}}$ then value α = ?

Ans. 1/2

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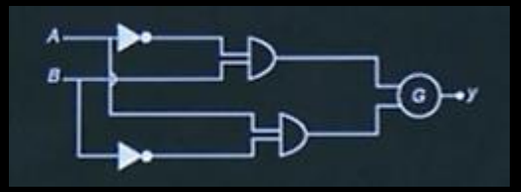
#Q.



For a given logic circuit truth table is given identify the gate G.

A	B	y
0	0	1
1	0	0
0	1	0
1	1	1

(A) AND

(B) NOR

(C) NAND

(D) OR

Ans. (B)

#Q. Displacement current in capacitor of area 16 cm^2 is 6 A at an instant. Find displacement current across area 3.2 cm^2.

A 1.2 A

B 1.6 A

C 2.1 A

D 0.5 A

Ans. (A)

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#Q. In a series LCR circuit the maximum amplitude of current is I_0 when the resistance is R. What is the maximum amplitude of current if the resistor is replaced by a resistor of resistance $\frac{R}{2}$.

A I_0

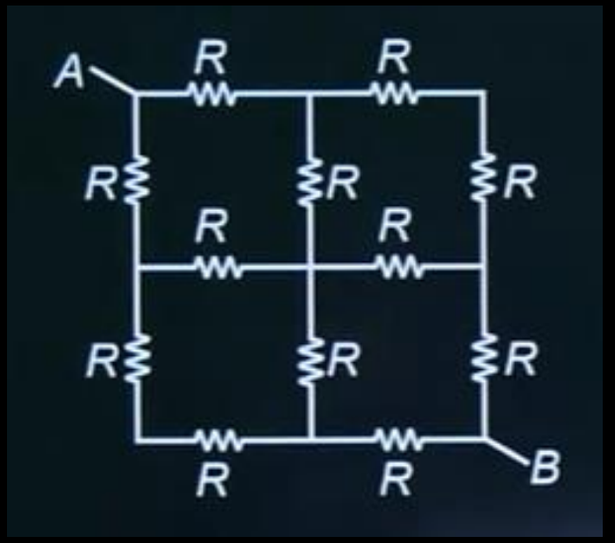
B $2I_0$

C $\frac{I_0}{2}$

D $\frac{2I_0}{3}$

Ans. (B)

#Q. If equivalent resistance across AB is $\frac{NR}{2}$, find N



Ans. 3

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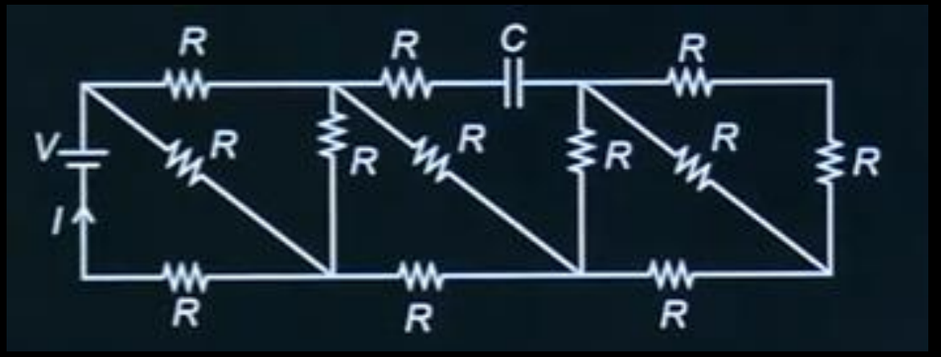
#Q. In the RC circuit shown, find I.



(A) $\frac{V}{5R}$

(B) $\frac{5V}{3R}$

(C) $\frac{8V}{13R}$

(D) $\frac{3V}{R}$

Ans. (C)