VIDYAPEETH

JEE MAINS PAPER DISCUSSION 2025

LIVE STREAMING

Session - 1
24 Jan 2025, SHIFT - 01

Memory Based Discussion

PHYSICS

[Mechanical Properties of fluids - Medium]

A drop of radius R is split into 27 drops of equal radius, the work done is 10 J. If the same big drop is split into 64 equal drops, the work done is

(A) 10

(B) 15

(C) 20

(D) 75/4

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Alternating current - Easy]

If $I = I_A \sin \omega t + I_B \cos \omega t$, then find rms value of current

(A) $I_{rms} = I_A + I_B$

(B) $I_{rms} = \sqrt{I_A^2 + I_B^2}$

(C) $I_{rms} = \frac{1}{2}\sqrt{I_A^2 + I_B^2}$

(D) $I_{rms} = \sqrt{\frac{I_A^2 + I_B^2}{2}}$

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Rotational Motion - Medium]

A solid cylinder of mass m and radius r is released from rest at the top of a rough inclined plane making an angle of 45° with the horizontal. Assuming the cylinder rolls without slipping, find the acceleration of the axis of the cylinder.

(A) $\frac{g}{2}$

(B) $\frac{g}{\sqrt{2}}$

(C) $\frac{2g}{3\sqrt{2}}$

(D) $\frac{g}{3\sqrt{2}}$

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Rotational Motion - Easy]

Body projected with initial velocity v_0 at 45° angle from horizontal in X – Y Plane. Angular momentum at highest point about point of projection is.

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Ray optics - Easy]

What is relative shift of focal length of a lens when optical power is increased from 0.1 D to 2.5 D?

(A) 24/25

(B) 13/10

(C) 21/25

(D) 11/10

[Oscillations - Medium]

A spring-block system has a time period of 2 seconds. If D is the total distance traveled by the block and d is the displacement of the block in 12.5 seconds, find the ratio $\frac{D}{d}$.

(A) 12
(B) 25
(C) 20
(D) 10

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Dual nature - Medium]

A particle with initial velocity v_0 has an initial de Broglie wavelength λ_0. If an electric field $\vec{E} = E_0\hat{k}$ is present in space, find the de Broglie wavelength of the particle at time t.

(A) $\frac{h}{mv_0 - qE_0t}$

(B) $\frac{h}{mv_0 + qE_0t}$

(C) $\frac{h}{m(v_0 + tE_0)}$

(D) $\frac{h}{mv_0}$

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Current electricity - Easy]

A wire of resistance 9 ohm is bent into a form of equilateral triangle. The equivalent resistance between any two points of its side will be

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Work power and energy - Easy]

A force is given by $F = a + bx^2$, where $a = 1$. If the displacement of the object is 1 m and the work done is 10 J , find the value of b.

(A) 9

(B) 18

(C) 27

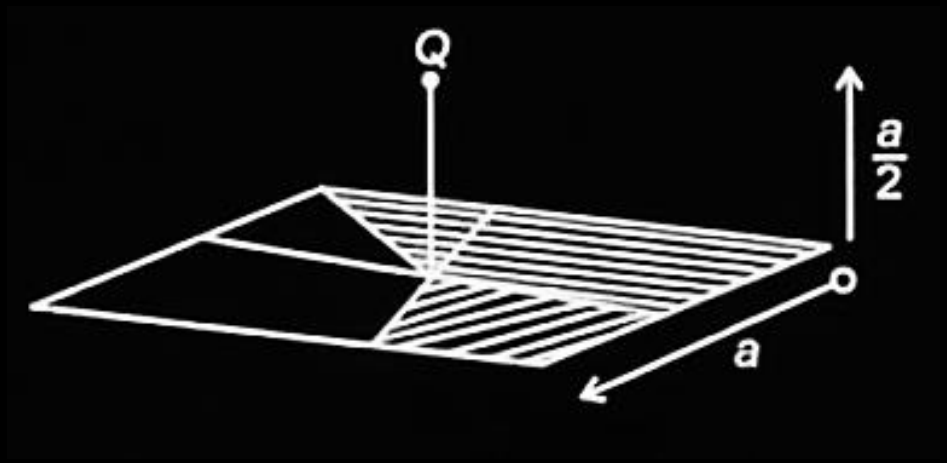
(D) 36

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Electric charges and field - Hard]

The electric flux through the shaded area of square plate of side a due to point charge placed at distance of a/2 from it as shown in figure, is $\frac{NQ}{48\varepsilon_0}$. Then N is



QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Moving charges and magnetism - Easy]

In a square loop of side length $\frac{1}{\sqrt{2}}$ m, a current of 5 A is flowing. Find magnetic field at its centre in (μT).

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Ray optics - Medium]

A plano-convex lens has a radius of curvature of 2 cm and a refractive index of 1.5 . Its focal length is f_1 in air and f_2 in a medium with a refractive index of 1.2. Calculate the ratio $\frac{f_1}{f_2}$.

(A) $\frac{1}{2}$

(B) $\frac{2}{3}$

(C) $\frac{3}{4}$

(D) $\frac{1}{3}$

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Gravitation - Easy]

Satellite A is launched in a circular orbit of radius R. Satellite B is launched in circular orbit of radius 1.03R. Time period of B is greater than A by approximately

(A) 9%
(B) 4.5%
(C) 3%
(D) 2.5%

[Atoms - Easy]

An electron jumps from principle quantum state A to C by releasing photon of wavelength 2000Å and from state B to C by releasing of photon of wavelength 6000Å, then find the wavelength of photon for transition from A to B.

(A) 3000Å
(B) 4000Å
(C) 8000Å
(D) 2000Å

QUESTION

JEE MAINS 2025, 24 Jan 2025, SHIFT - 01

[Thermodynamics - Easy]

For an ideal mono atomic gas undergoing an isobaric process, the ratio of $\frac{\Delta Q}{\Delta U}$ is

(A) 5/3
(B) 7/5
(C) 4/3
(D) 5/4

Future IITians