PAPER SOLUTION

From Meerut

JEE MAIN

2025

JAN	SHIFT
24	1st

Aryan Agarwal
Founder and CEO
CVPS INTEGRATED STAR COURSE

#Q. 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 $I_{rms} = \sqrt{\frac{I_A^2 + I_B^2}{2}}$

D $I_{rms} = \frac{1}{2}\sqrt{I_A^2 + I_B^2}$

Ans. (C)

#Q. The electric flux through 1 face 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 :

Ans. 8

#Q. 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).

Ans. 8μt

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. A big spherical drop break down to 27 drops the work done to break is 10 J and the same drop break into 64 droplets of same radius find the work done.

A 5

B 15

C 20

D 10

Ans. (B)

#Q. A wire of resistance 9 ohm is bent into a form of equilateral triangle the equivalent resistance between any two points of its vertex will be -

Ans. 2 Ω

JEE MAIN 2025 LIVE PAPER DISCUSSION

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

A 9%

B 4.5%

C 3%

D 2.5

Ans. (B)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. 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

Ans. (A)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. Body projected with initial velocity v_0 at 45° angle in X–Y Plane. Angular momentum at highest point is.

A $\frac{mv_0^3}{4g}$

B $\frac{mv_0^3}{4\sqrt{2}g}$

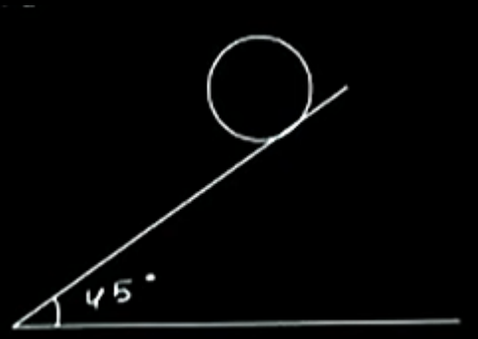
C $\frac{mv_0^2}{4\sqrt{2}g}$

D $\frac{mv_0}{2\sqrt{2}g}$

Ans. (C)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. Find out the linear acceleration of a solid cylinder of mass m and radius R rolling down an inclined plane of inclination 45º



JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. A particle is performing SHM, amplitude is 1 cm and time period is 2s find ratio of distance travelled to displacement of particle in 12.5 s ?

A 15

B 10

C 25

D 1/25

Ans. (C)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. An electron of mass m enters in a region of uniform electric field $\vec{E} = -E_0\hat{k}$ at t= 0 with an initial velocity $\vec{V} = V_0\hat{\imath}$. If the de-Broglie wavelength is λ_0 initially, the de-Broglie wavelength at a time t is

A $\lambda_0\sqrt{1+\frac{m^2V_0^2}{e^2E_0^2t^2}}$

B $\lambda_0\sqrt{1+\frac{e^2E_0^2t^2}{m^2V_0^2}}$

C $\frac{\lambda_0}{\sqrt{1+\frac{e^2E_0^2t^2}{m^2V_0^2}}}$

D $\frac{\lambda_0}{\sqrt{1+\frac{m^2V_0^2}{e^2E_0^2t^2}}}$

Ans. (C)

#Q. In YDSE, lights of wavelength 600 nm and 480 nm are used. What is the minimum order of bright fringe of 480 nm coincides with bright fringe of 600 nm.

A 8

B 7

C 6

D 5

Ans. (D)

#Q. Find the maximum possible velocity for the given angle of banking θ on a curved road of radius r having coefficient of friction μ.

A $v_{max} = \sqrt{\frac{gr(\mu+\tan\theta)}{(1-\mu\tan\theta)}}$

B $v_{max} = \sqrt{\frac{gr(\mu-\tan\theta)}{(1-\mu\tan\theta)}}$

C $v_{max} = \sqrt{\frac{gr(1+\mu\tan\theta)}{(1-\mu\tan\theta)}}$

D $v_{max} = \sqrt{\frac{gr(\mu-\tan\theta)}{(1+\mu\tan\theta)}}$

Ans. (A)

JEE MAIN 2025 LIVE PAPER DISCUSSION

#Q. In a parallel plate capacitor length and width are 3 cm and 1 cm respectively. Separation between plates is 3 μm. By which of the following values capacitance increases by a factor of 10.

(A) l = 6 cm, b = 5 cm, d= 3 μm
(B) l = 5 cm, b = 2 cm, d= 1 μm
(C) l = 5 cm, b = 1 cm, d= 30 μm
(D) l = 1 cm, b = 1 cm, d= 30 μm

A. A, B

B. A, C

C. B, C

D. B, C, D

Ans. (A)

#Q. A particle moves on a straight line under the influence of a force $F = \alpha + \beta x^2$, where x is the displacement, and $\beta = -12$ SI units. If the total work done for a displacement x = 1m is 12 J, then α is _____ SI units.:

Ans. 16

#Q. A screw gauge has LC = 0.01 mm. Now pitch of screw gauge increases by 75% and number of division decreases by 50%. Find the new least count of screw gauge.

Ans. 3×10^{-2} mm