JEE Main 2026 April 8 Shift 1 Physics

Question Paper

Conducted by National Testing Agency (NTA)

General Instructions

(i) The test is of 3 hours duration.

(ii) This test paper consists of 75 questions. Each subject (PCM) has 25 questions. The maximum marks are 300.

(iii) This question paper contains Three Parts. Part-A is Physics, Part-B is Chemistry and Part-C is Mathematics. Each part has only two sections: Section-A and Section-B.

(iv) Section - A : Attempt all questions.

(v) Section - B : Attempt all questions.

(vi) Section - A (01 – 20) contains 20 multiple choice questions which have only one correct answer. Each question carries +4 marks for correct answer and –1 mark for wrong answer.

(vii) Section - B (21 – 25) contains 5 Numerical value based questions. The answer to each question should be rounded off to the nearest integer. Each question carries +4 marks for correct answer and –1 mark for wrong answer.

1. There are two projectiles thrown at angles θ_1 & θ_2 such that their ranges are same. Their speeds of projection are also same and time periods are 10 sec and 5 sec respectively. Find the range.

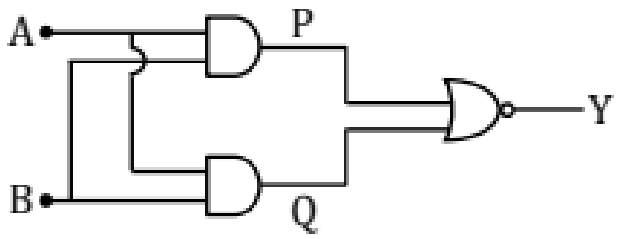
(1) 250 m

(2) 300 m

(3) 650 m

(4) 100 m

2. For the logic gate shown in the diagram, find the output Y for the given inputs A and B.



(1) $A \cdot \overline{B}$

(2) $\overline{A} + \overline{B}$

(3) $A + B$

(4) $\overline{A \cdot B}$

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3. A block is attached to a spring and it oscillates with natural frequency f_1. If the spring is cut into two half and only one of the half spring is connected to the block then the frequency becomes f_2. Find $\frac{f_2}{f_1}$.

(1) $\sqrt{2}$

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

(3) 2

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

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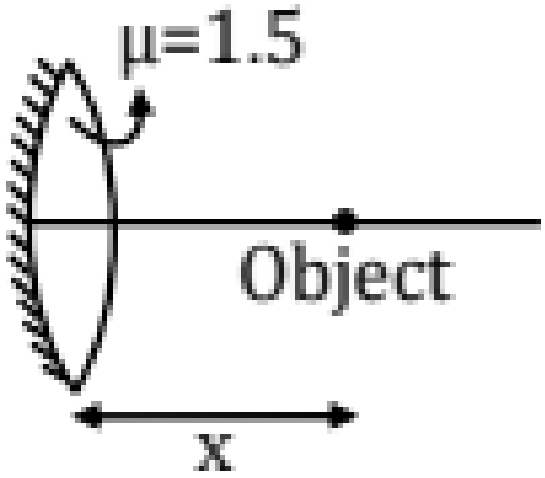
4. A biconvex lens having radius of curvature $20\,\text{cm}$ for both surfaces and one side of the lens is silvered as shown in the figure. Object is at distance x cm from the lens. Find x such that image is on the object itself. Given $\mu = 1.5$.



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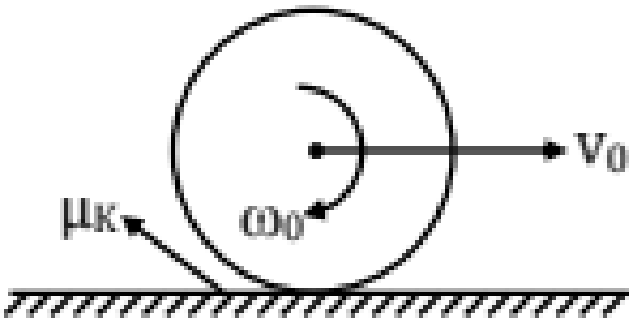
5. A solid cylinder of mass m and radius R is projected on a rough surface having kinetic friction coefficient μ_k with velocity v_0 and angular velocity ω_0 as shown in the figure. Find out time after which rolling starts. $(\omega_0 = \frac{v_0}{4R})$



(1) $\frac{3\omega_0 R}{\mu_k g}$

(2) $\frac{2\omega_0 R}{\mu_k g}$

(3) $\frac{\omega_0 R}{\mu_k g}$

(4) $\frac{\omega_0 R}{3\mu_k g}$

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6. A new unit (α) of length is chosen such that it is equal to the distance travelled by light in vacuum in 1 second. What is the distance between Venus and Earth in terms of this new unit. If light takes 6 min 40 sec to cover the distance.

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7. Find dipole moment of a system consisting of charge $q_1 = 3\,\mu C$ and $q_2 = -9\,\mu C$ with position coordinates $\vec{r}_1 = 2\hat{i} + 3\hat{j} + 3\hat{k}$ and $\vec{r}_2 = \hat{i} + \hat{j} + \hat{k}$ respectively.

(1) $-3\hat{i}$ μC-m

(2) $-9\hat{i}$ μC-m

(3) $-6\hat{i}$ μC-m

(4) $-5\hat{i}$ μC-m

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8. If $H = \frac{\varepsilon^r E^p x^q}{t^s}$ find p, q, r and s.

$H \rightarrow$ Magnetic field

$\varepsilon \rightarrow$ Permittivity of medium

$E \rightarrow$ Electric field

$x \rightarrow$ distance

$t \rightarrow$ time

(1) $r = 0,\ p = 1,\ q = -1,\ s = 1$

(2) $r = 1,\ p = -1,\ q = -1,\ s = 1$

(3) $r = 1,\ p = 1,\ q = +1,\ s = 1$

(4) $r = 0,\ p = -1,\ q = -1,\ s = 1$

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9. Two photons of wavelength λ and 2λ are incident on a metal surface and emit photoelectrons of maximum kinetic energies $3k$ and k. Find work function of the metal.

(1) $\frac{hc}{4\lambda}$

(2) $\frac{hc}{2\lambda}$

(3) $\frac{2hc}{3\lambda}$

(4) $\frac{hc}{\lambda}$

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10. A solenoid having length 30 cm. If there are 10 turns/cm and current through solenoid changes from 2A to 4A in 3.14 sec. Find emf induced. (Area is A)

(1) $0.24A$ volt

(2) $0.40A$ volt

(3) $0.80A$ volt

(4) $0.20A$ volt

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11. 1 mole of ideal diatomic gas is enclosed in a cylinder piston arrangement having cross-sectional area of piston $4\,\text{cm}^2$. If gas has only rotational modes and $P_{atm} = 100$ kPa, some

amount of heat is added to the system as a result piston moves up slowly by $2.5\,\text{cm}$. If temperature change is $1.2^\circ C$. Find heat given to gas.

(1) $19.9\,J$

(2) $23.5\,J$

(3) $14.6\,J$

(4) $10\,J$

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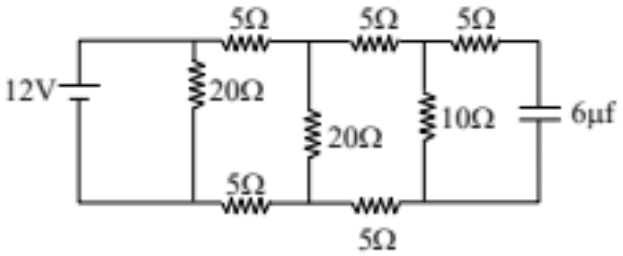
12. Find charge on capacitor at steady state.



(1) $18\,\mu C$

(2) $16\,\mu C$

(3) $10\,\mu C$

(4) $8\,\mu C$

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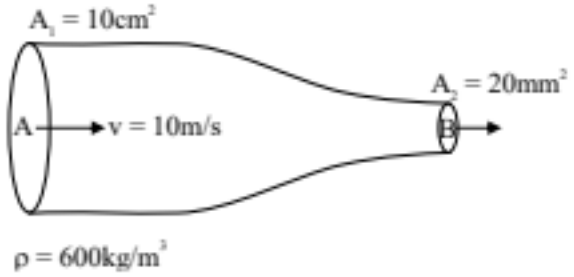
13. Find pressure difference between A and B.



(1) $75\,MPa$

(2) $85\,MPa$

(3) $95\,MPa$

(4) $65\,MPa$

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14. A car is moving in a circular path of radius $20\,m$ with speed $54\,km/hr$. A pendulum is hanging from the roof of the car. Find the angle made by pendulum with vertical. (Take

$g = 10\,m/s^2$).

(1) $\tan^{-1}\left(\frac{9}{8}\right)$

(2) $\tan^{-1}\left(\frac{8}{9}\right)$

(3) $\tan^{-1}\left(\frac{4}{3}\right)$

(4) $\tan^{-1}\left(\frac{3}{4}\right)$

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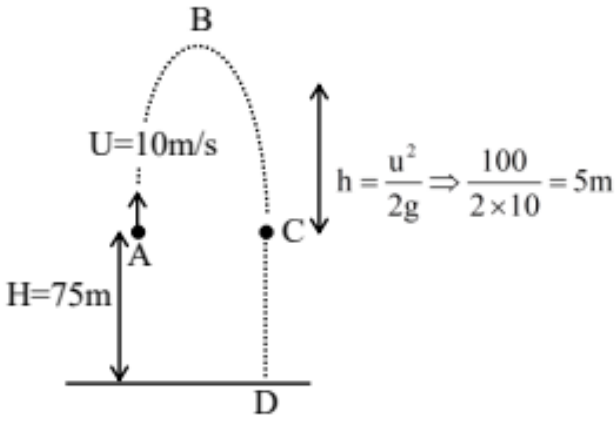
15. A balloon is moving with speed $10\,m/s$ in upward direction. At height $75\,m$ a stone is released then find distance travelled by stone in air.



(1) $70\,m$

(2) $80\,m$

(3) $90\,m$

(4) $85\,m$

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16. Two nuclei $A(200\,amu)$ and $B(212\,amu)$ undergoes α-decay and Q-value is same and equal to $1\,MeV$. Find ratio of KE of α-particle.

(1) $\frac{2597}{2600}$

(2) $\frac{2600}{2597}$

(3) $\frac{5200}{2597}$

(4) $\frac{2597}{5200}$

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17. At $t = 0$ two particles A of mass $3.4\,kg$ and B of mass $2.5\,kg$ are moving along x-axis with initial velocities $5\,m/s$ and $10\,m/s$ respectively starting from $x = 0$. At $t = 5s$ position of A is $x = 104\,m$ and of B is $x = 137\,m$. Find ratio of momentum at $t = 10s$.

(1) 2.17

(2) 0.17

(3) 3.17

(4) 1.17

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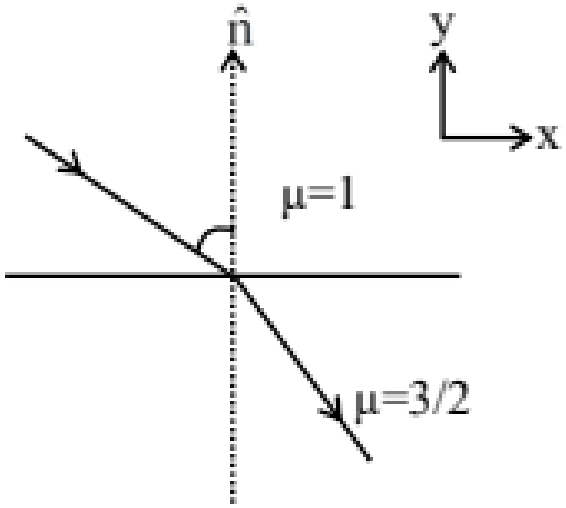
18. Incident ray is along $3\hat{i}-2\hat{j}$ and refracted ray is along $c\hat{i}-4\hat{j}$. Find c.



(1) 1.6

(2) 0.6

(3) 2.6

(4) 4

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19. A water droplet falls in air and attains terminal velocity v_1. If it splits into 64 identical droplets each having terminal velocity v_2. Find $\frac{v_2}{v_1}$.

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

(2) $\frac{1}{4}$

(3) $\frac{1}{16}$

(4) $\frac{1}{32}$

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20. Initial pressure and volume of monoatomic gas is P and V. It is expanded adiabatically to 27 times of initial volume. Find magnitude of change in internal energy.

(1) $\frac{3}{2}PV$

(2) PV

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

(4) $\frac{PV}{2}$