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# JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

**DATE & DAY:** 05<sup>th</sup> April 2026 & Sunday

**PAPER-1**

**Duration:** 3 Hrs.

**Time:** 09:00 – 12:00 IST

**SUBJECT: PHYSICS**

Selections in JEE (Advanced)/  
IIT-JEE Since 2002

**52979**

Classroom: 35901 | Distance: 17078

Selections in JEE (Main)/  
AIEEE Since 2009

**262693**

Classroom: 194471 | Distance: 68222

Selections in NEET (UG)/  
AIPMT/AIIMS Since 2012

**22733**

Classroom: 15409 | Distance: 7324

**Admission Open for 2026-27**

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$$\vec{F}_B \perp \vec{B}$$

$$\vec{a} \perp \vec{B} \rightarrow \vec{a} \cdot \vec{B} = 0$$

$$12 - x = 0$$

$$x = 12$$

5. If R = resistance, L = inductance, C = capacitance, then dimension  $[ML^2 T^{-4} A^{-2}]$  represents :-

(1)  $\frac{R}{\sqrt{LC}}$

(2)  $\frac{1}{R} \sqrt{\frac{L}{C}}$

(3)  $R\sqrt{LC}$

(4)  $\sqrt{RLC}$

Ans. (1)

Sol. Dimension of resistance

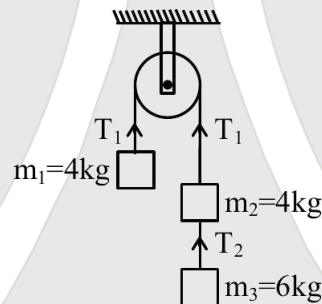
$$\Rightarrow [R] = \left[ \frac{V}{I} \right] = ML^2 T^{-3} A^{-2}$$

$$\frac{1}{\sqrt{LC}} \text{ is angular frequency so } \omega = \frac{1}{\sqrt{LC}}$$

$$[\omega] = T^{-1}$$

$$\text{Thus, } \left[ \frac{R}{\sqrt{LC}} \right] = ML^2 T^{-3} A^{-2} \times T^{-1} = ML^2 T^{-4} A^{-2}$$

6. Find the ratio of  $T_1$  &  $T_2$



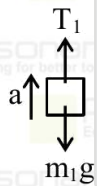
(1)  $\frac{5}{3}$

(2)  $\frac{3}{5}$

(3)  $\frac{10}{12}$

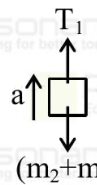
(4)  $\frac{12}{10}$

Ans. (1)  
Sol.



$$T_1 - m_1 g = m_1 a$$

$$T_1 - 40 = 4a$$



$$(m_2 + m_3)g - T_1 = (m_2 + m_3)a$$

$$100 - T_1 = 10a$$

$$T_1 - 40 = 4 \left( \frac{100 - T_1}{10} \right)$$

$$T_1 + \frac{2}{5} T_1 = 40 + 40$$

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$$\frac{7}{5} T_1 = 80$$

$$T_1 = \frac{80 \times 5}{7} \text{ N}$$

$$m_3 g - T_2 = m_3 a$$

$$60 - 6a = T_2$$

$$60 - \frac{6}{10} \left[ 100 - \frac{400}{7} \right] = T_2$$

$$60 - \frac{6}{70} \times 300 = T_2$$

$$\frac{420 - 180}{7} = T_2$$

$$T_2 = \frac{240}{7} \text{ N}$$

$$\frac{T_1}{T_2} = \frac{400}{240} = \frac{5}{3}$$

7. In YDSE,  $\beta = 2.4 \text{ mm}$ , where  $\beta$  is fringe width. If setup is dipped in medium of refractive index  $\mu = 1.2$  find new fringe width (in mm)

(1) 4

(2) 2

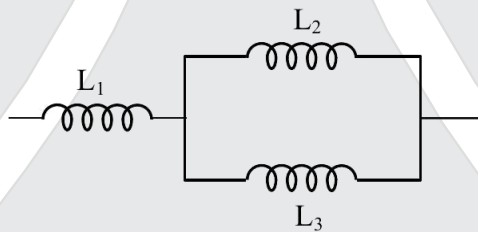
(3) 8

(4) 6

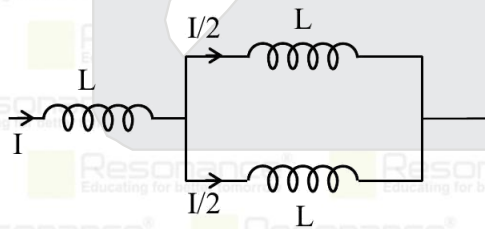
Ans. (2)

Sol.  $\beta' = \frac{\beta}{\mu} = \frac{2.4}{1.2} = 2 \text{ mm}$

8. In the below diagram inductance  $L_1 = L_2 = L_3$ . Find the ratio of total energy stored in all inductors to energy stored in inductor  $L_2$ .



Ans. (6)  
Sol.



$$L_{eq} = L + \frac{L}{2} = \frac{3L}{2}$$

$$\frac{E_2}{E_{total}} = \frac{\frac{1}{2} \times L \times \left(\frac{I}{2}\right)^2}{\frac{1}{2} \times \frac{3L}{2} \times I^2} = \frac{1/4}{3/2} = \frac{1}{6}$$

then,  $\frac{E_{total}}{E_2} = \frac{6}{1}$

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9. If speed of light is  $2.12 \times 10^8$  m/s in medium of equilateral prism then find out minimum angle of deviation.  
 (1)  $45^\circ$  (2)  $60^\circ$  (3)  $30^\circ$  (4)  $53^\circ$

Ans. (3)

Sol. 
$$\mu = \frac{\sin \left[ \frac{\delta_{\min} + A}{2} \right]}{\sin \frac{A}{2}}$$

$$\mu = \frac{C}{V} = \frac{3 \times 10^8}{2.12 \times 10^8} = \sqrt{2}$$

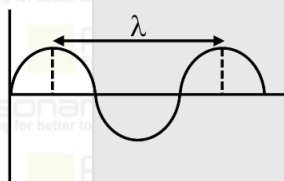
$$\sqrt{2} = \frac{\sin \left[ \frac{\delta_{\min} + 60^\circ}{2} \right]}{\sin 30^\circ}$$

$$\sin \left[ \frac{\delta_{\min} + 60^\circ}{2} \right] = \frac{1}{\sqrt{2}}$$

$$\delta_{\min} + 60^\circ = 90^\circ \Rightarrow \delta_{\min} = 30^\circ$$

10. A travelling wave on string is given by the equation  $y = 3\sin \left( 100t + 0.018x + \frac{\pi}{6} \right)$ , find the minimum distance (in m) between 2 crest.  
 (1) 349.06 (2) 625.75 (3) 475.56 (4) 175.75

Ans. (1)  
Sol.



Minimum distance between two crest =  $\lambda$

From equation  $K = \frac{2\pi}{\lambda}$

$$0.018 = \frac{2\pi}{\lambda}$$

$$\lambda = \left( \frac{2\pi}{0.018} \right)$$

$$\lambda = 349.06 \text{ m}$$

11. Two points A & B are 16 km from the surface of Earth. Point 'A' is above the surface of Earth while point 'B' is below the surface of Earth. Acceleration due to gravity at points A & B are  $g_A$  &  $g_B$  respectively. Then  $\frac{g_A}{g_B}$  is :- (Take radius of Earth = 6400 km)

- (1) 1 (2)  $\frac{398}{399}$  (3)  $\frac{399}{398}$  (4)  $\frac{1}{2}$

Ans. (2)

Sol.  $g_A = g \left( 1 - \frac{2h}{R_e} \right) = g \left( 1 - \frac{2 \times 16}{6400} \right)$

$$g_B = g \left( 1 - \frac{d}{R_e} \right) = g \left( 1 - \frac{16}{6400} \right)$$

$$\frac{g_A}{g_B} = \frac{g \left( \frac{6400 - 32}{6400} \right)}{g \left( \frac{6400 - 16}{6400} \right)} = \frac{6368}{6384} = \frac{398}{399}$$

12. In a vernier calliper, 1 main scale division equals 1 mm and 9 MSD was divided into 10 equal parts by vernier scale. When nothing was present in the jaw, zero of vernier scale lies to the right of zero of main scale and 7<sup>th</sup> division of vernier scale coincide with one of the main scale. Find zero error in the vernier

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calliper.

- (1) 0.3 mm      (2) 0.7 mm      (3) -0.3 mm      (4) -0.07 mm

Ans. (2)

Sol. Since  $9\text{MSD} = 10\text{VSD}$

$\therefore$  L.C of vernier calliper = 0.1 mm

Since zero of vernier scale lies to the right of zero of main scale  $\Rightarrow$  +ve zero error.

$\therefore$  zero error = +0.7 mm

13. In an AC circuit with R&C having angular frequency  $\omega$  has peak current  $I$  and if angular frequency is  $\frac{\omega}{4}$  then peak current becomes  $\frac{I}{3}$ . Find the ratio of resistance and reactance at  $\omega$ .

- (1)  $\sqrt{\frac{8}{7}}$       (2)  $\sqrt{\frac{2}{7}}$       (3)  $\sqrt{\frac{7}{8}}$       (4)  $\sqrt{\frac{9}{8}}$

Ans. (3)

Sol. As we know that current in RLC circuit is given by

$$I = \frac{V}{Z} = \frac{V}{[R^2 + (X_L - X_C)^2]^{1/2}}$$

$$I = \frac{V_0}{\sqrt{R^2 + \left(\omega L - \frac{1}{\omega C}\right)^2}}$$

As circuit is RC

$$I_0 = \frac{V_0}{(R^2 + X_C^2)^{1/2}}$$

$$\frac{I_0}{3} = \frac{V_0}{[R^2 + (4X_C)^2]^{1/2}}$$

$$R^2 + (X_C)^2 = \frac{(R^2 + 16X_C^2)}{9}$$

$$\frac{8R^2}{9} = \frac{7X_C^2}{9}$$

$$\frac{R}{X_C} = \sqrt{\frac{7}{8}}$$

14. Identify correct statements :

- (1) Zeroth law of thermodynamics gives concept of temperature.  
 (2) In isothermal expansion  $\Delta Q \neq \Delta W$   
 (3) 1<sup>st</sup> law of thermodynamics gives concept of internal energy.  
 (4) Product of intensive and extensive properties is extensive.  
 (5) Ratio of extensive property and mass is extensive.

- (1) Statements 1 & 4      (2) Statements 1,3,4  
 (3) Statements 3,4,5      (4) Statements 1,2,3

Ans. (1)

Sol. True statement are 1 & 4

15. Upper wire has cross-section area  $0.008 \text{ cm}^2$  and lower wire has area  $0.004 \text{ cm}^2$ . Find maximum mass of pan that can be connected without breaking any wire. Given breaking stress wire is  $= 8 \times 10^8 \text{ N/m}^2$ .

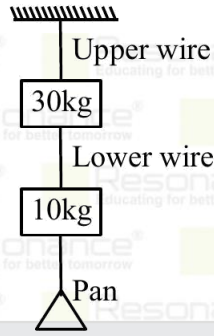
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- (1) 22 kg                      (2) 24 kg                      (3) 26 kg                      (4) 28 kg

Ans. (1)

Sol.

Let mass of pan =  $m$

Tension in lower wire =  $(10 + m)g$

$$\text{Stress in lower wire} = \frac{(10+m)g}{0.004 \times 10^{-4}}$$

$$\frac{(10 + m)g}{0.004 \times 10^{-4}} = 8 \times 10^8$$

$$10 + m = 8 \times 10^7 \times 0.004 \times 10^{-4}$$

$$10 + m = 32$$

$$m = 22 \text{ kg}$$

Tension in upper wire =  $(40 + m)g$

$$\text{Stress in upper wire} = \frac{(40+m)g}{0.008 \times 10^{-4}}$$

$$\frac{(40 + m)g}{0.008 \times 10^{-4}} = 8 \times 10^8$$

$$(40 + m) = 64$$

$$m = 24$$

So the maximum mass that can be hanged without breaking is 22 kg

16. In a region where electric field exist as  $\vec{E} = -E_0\hat{i}$ . Initially at  $t = 0$  velocity of particle of mass  $m$  is  $4v_0\hat{i}$  then de-Broglie wavelength  $\lambda$  in terms of  $\lambda_0 = \frac{h}{4mv_0}$  at time  $t$  is :

(1)  $\lambda = \frac{h\lambda_0}{h+qE_0\lambda_0 t}$

(2)  $\lambda = \frac{h\lambda_0}{h-qE_0\lambda_0 t}$

(3)  $\lambda = \frac{h\lambda_0}{h+2E_0q\lambda_0 t}$

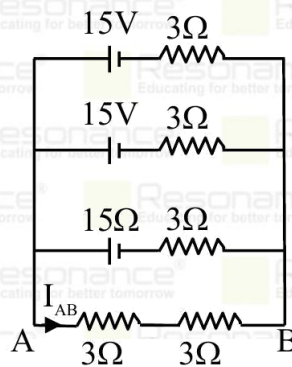
(4)  $\lambda = \frac{h\lambda_0}{h+\frac{qE_0\lambda_0 t}{2}}$

Ans. (2)

Sol.

$$\lambda = \frac{h}{mv} = \frac{h}{m(4v_0 - \frac{qE_0 t}{m})} = \frac{h}{4mv_0 - qE_0 t} = \frac{h}{\frac{h}{\lambda_0} - qE_0 t} = \frac{h\lambda_0}{h - qE_0\lambda_0 t}$$

17. For the circuit shown below, find current across AB. ( $I_{AB}$ )



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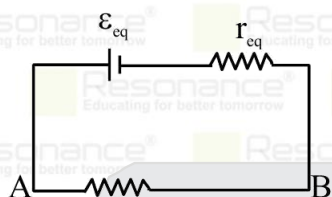
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- (1)  $\frac{10}{7}$  A      (2)  $\frac{13}{7}$  A      (3)  $\frac{11}{7}$  A      (4)  $\frac{15}{7}$  A

Ans. (4)

Sol. This circuit can be resolved to



$$\varepsilon_{eq} = \frac{15}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3}} = \frac{15 \times 3}{1 + 1 + 1} = 15 \text{ volt}$$

$$r_{eq} = \frac{1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3}} = 1$$

$$r_{eq} = 1$$

$$I_{AB} = \frac{\varepsilon_{eq}}{6 + r_{eq}} = \frac{15}{1 + 6} = \frac{15}{7} \text{ A}$$

18. Displacement current inside a capacitor of capacitance  $6\mu\text{F}$  is  $4\text{ A}$ . Find the rate of change of voltage across capacitor.

- (1)  $6.6 \times 10^5$       (2)  $5.2 \times 10^5$       (3)  $1.3 \times 10^6$       (4)  $2.4 \times 10^6$

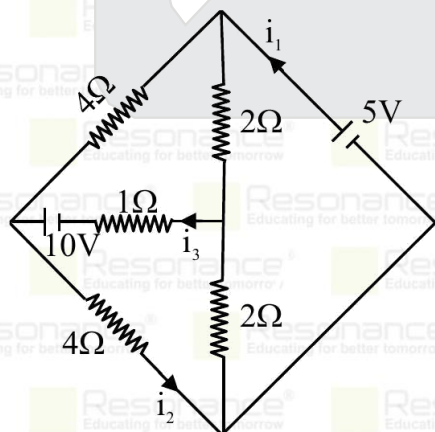
Ans. (1)

Sol.  $i_d = C \frac{dV}{dt}$

$$4 = 6 \times 10^{-6} \left( \frac{dV}{dt} \right)$$

$$\frac{dV}{dt} = 6.6 \times 10^5 \text{ volts}$$

19.



Correct option for this circuit is:

- (1) Current  $i_1 = \frac{15}{16}$  A

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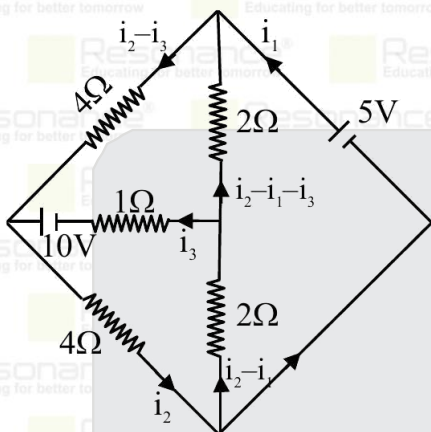
(2) Current  $i_2 = \frac{15}{8}$  A

(3) Current  $i_3 = \frac{5}{4}$  A

(4) Current  $i_3 = \frac{5}{8}$  A

Ans. (2)

Sol.



$$-2(i_2 - i_1 - i_3) - 4(i_2 - i_3) - 10V + i_3 = 0$$

$$2i_1 - 6i_2 + 7i_3 = 10 \quad \dots\dots\dots(1)$$

$$-2(i_2 - i_1) - i_3 + 10 - 4i_2 = 0$$

$$-2i_1 + 6i_2 + i_3 = 10 \quad \dots\dots\dots(2)$$

$$5 - 4(i_2 - i_3) - 4i_2 = 0$$

$$8i_2 - 4i_3 = 5 \quad \dots\dots\dots (3)$$

solving 1,2,3

$$i_3 = \frac{5}{2}$$

$$i_2 = \frac{15}{8}$$

$$i_1 = \frac{15}{8}$$

20. In a compound microscope objective and eyepiece are both biconvex lenses. If objective is cut into two half such that plano convex lens is made, now it is used as objective to get same magnification in normal adjustment the tube length should be changed by n times. Find n .

(1) 2

(2) 1/2

(3) 4

(4) 1/4

Ans. (1)

Sol.

$$m \Rightarrow \frac{L}{f_0} \times \frac{D}{f_e}$$

After cutting objective lens  $f_0' \Rightarrow 2f_0$

$$m' = \frac{L'}{2f_0} \times \frac{D}{f_e}$$

If  $m' = m$

$$\frac{L}{f_0} \times \frac{D}{f_e} = \frac{L'}{2f_0} \times \frac{D}{f_e}$$

$$L' = 2L$$

21. For ideal gas n : number of moles,  $C_v$  : molar specific heat at constant volume,  $\gamma$  = adiabatic exponent of gas,  $T_f$  : final temperature,  $T_i$  : initial temperature, R : gas constant.

Assertion :  $nC_v(T_f - T_i) = \frac{nR}{\gamma - 1} (T_f - T_i)$

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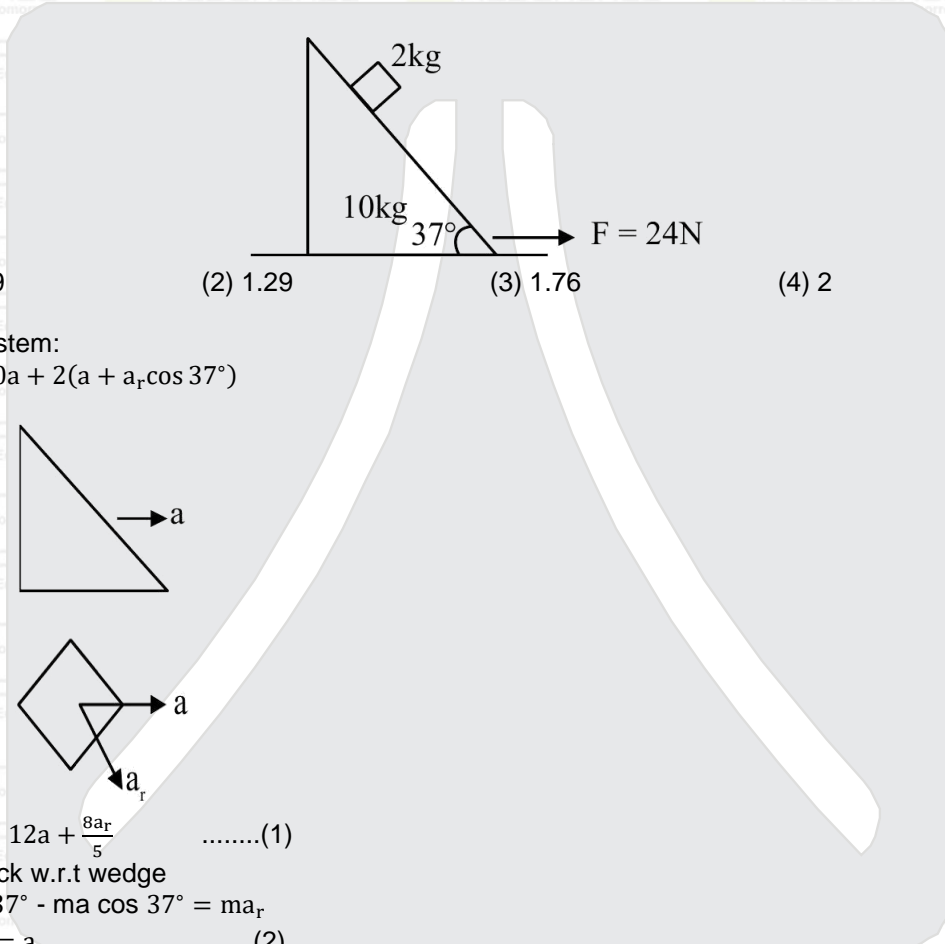
Reason :  $\gamma = 1 + \frac{2}{f}$

- (1) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (2) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.
- (3) Assertion true but Reason is false.
- (4) Assertion is false but Reason is true.

Ans. (2)

Sol. Using theory.

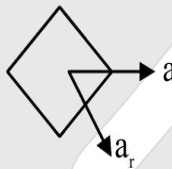
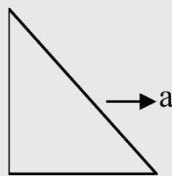
22. Find time taken by block to slide a distance 8.8 m w.r.t wedge (in sec). All surfaces are smooth.



Ans. (1)

Sol. For system:

$$24 = 10a + 2(a + a_r \cos 37^\circ)$$



$$\Rightarrow 24 = 12a + \frac{8a_r}{5} \dots\dots(1)$$

For block w.r.t wedge  
 $mg \sin 37^\circ - ma \cos 37^\circ = ma_r$

$$6 - \frac{4}{5}a = a_r \dots\dots(2)$$

solving (1) & (2)

$$24 = 12 \left( \frac{5}{4}(6 - a_r) \right) + \frac{8a_r}{5}$$

$$24 = 15(6 - a_r) + \frac{8a_r}{5}$$

$$a_r = \frac{66}{67/5} = 4.92 \text{ m/s}^2$$

time taken:

$$S = \frac{1}{2} \times 4.92t^2$$

$$t = 1.89 \text{ s}$$

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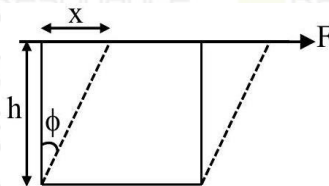
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23. A cube of side length 5 cm having modulus of rigidity  $10^5 \text{ N/m}^2$ . The top is pulled by a force 10 N, while the bottom is fixed. Find the displacement of upper surface of cube in (mm)

Ans. (2)

Sol.



$$\eta = \frac{F/A}{\phi} = \frac{Fh}{Ax}$$

$$x = \frac{Fh}{A\eta} = \frac{10 \times 5 \times 10^{-2}}{25 \times 10^{-4} \times 10^5} = \frac{1}{500} \text{ m}$$

$$\therefore x = 2 \text{ mm}$$

24. Moment of inertia of rod about an axis passing through point at distance  $\frac{\ell}{4}$  from center and perpendicular to rod is- (The uniform rod is of mass m and length  $\ell$ )

(1)  $\frac{7m\ell^2}{48}$

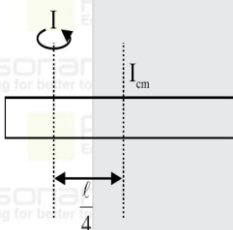
(2)  $\frac{3m\ell^2}{48}$

(3)  $\frac{4m\ell^2}{48}$

(4)  $\frac{m\ell^2}{48}$

Ans. (1)

Sol.



$$I = I_{cm} + md^2$$

$$= \frac{m\ell^2}{12} + \frac{m\ell^2}{16}$$

$$= \frac{4m\ell^2 + 3m\ell^2}{48}$$

$$= \frac{7m\ell^2}{48}$$

25. In hydrogen atom electron jump from state i to f. Radius of circular path of electron in state i & f are  $r_i$  &  $r_f$ , if  $\frac{r_i}{r_f} = \frac{4}{1}$  and Rydberg constant  $R = 1.0976 \times 10^7 \text{ m}^{-1}$ , then find wavelength of emitted photon (in Å) ( $r_i$  &  $r_f$  are minimum possible radius).

Ans. (1215)

Sol.

$$\frac{1}{\lambda} = Rz^2 \left[ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$$

$$\frac{1}{\lambda} = 1.0973 \times 10^7 (1)^2 \left[ \frac{1}{1} - \frac{1}{4} \right]$$

$$\lambda = 1215$$

## Resonance Eduventures Ltd.

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