

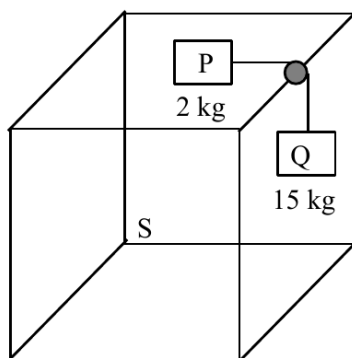
JEE-MAIN EXAMINATION - APRIL 2026

Physics · Question Paper

Held on Monday, 06th April 2026 · Morning Shift · 9:00 AM to 12:00 Noon

SECTION-A

- 26.** The density ρ of a uniform cylinder is determined by measuring its mass m , length l and diameter d . The measured values of m , l and d are 97.42 ± 0.02 g, 8.35 ± 0.05 mm and 20.20 ± 0.02 mm, respectively. Calculated percentage fractional error in ρ is _____.
(1) 0.63% (2) 0.82%
(3) 0.72% (4) 0.25%
- 27.** The potential energy of a particle changes with distance x from a fixed origin as $V = Av/x / (x + B)$, where A and B are constant with appropriate dimensions. The dimension of AB are _____.
(1) $[M^1 L^{5/2} T^{-2}]$ (2) $[M^{3/2} L^{5/2} T^{-2}]$
(3) $[M^1 L^2 T^{-2}]$ (4) $[M^1 L^{7/2} T^{-2}]$
- 28.** The rain drop of mass 1 g, starts with zero velocity from a height of 1 km. It hits the ground with a speed of 5 m/s. The work done by the unknown resistive force is _____. J. (take $g = 10 \text{ m/s}^2$)
(1) - 8.75 (2) - 8.35
(3) - 9.55 (4) - 9.98
- 29.** Two blocks (P and Q) with respectively masses 2 kg and 1.5 kg are joined by a massless thread. These blocks are mounted on a frictionless pulley which is fixed on the edge of a cube (S), as shown in the figure below. Block P is positioned on the top surface which has no friction and block Q is in contact with side-surface, having coefficient friction μ . The cube (S) moves towards the right with acceleration of $g/2$, where g is gravitational acceleration. During this movement the block P and Q remain stationary. The value of μ is _____. (take $g = 10 \text{ m/s}^2$)



- (1) 0.33 (2) 0.67
(3) 1 (4) 0.5

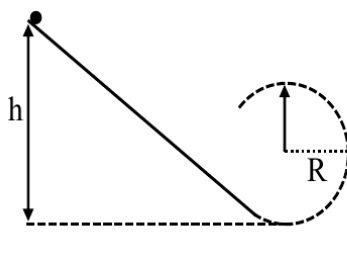
30. A lift of mass 1600 kg is supported by thick iron wire. If the maximum stress which the wire can withstand is $4 \times 10^8 \text{ N/m}^2$ and its radius is 4 mm, then maximum acceleration the lift can take is ____ m/s^2 . (take $g = 10 \text{ m/s}^2$ and $\pi = 3.14$)

- (1) 2.56 (2) 3.89
(3) 4.32 (4) 5.16

31. A solid sphere of radius 4 cm and mass 5 kg is rotating (rotation axis is passing through the centre of the sphere) with an angular velocity of 1200 rpm. It is brought to rest in 10 s by applying a constant torque. The torque applied and the number of rotations it made before it comes to rest are ____ and ____ respectively.

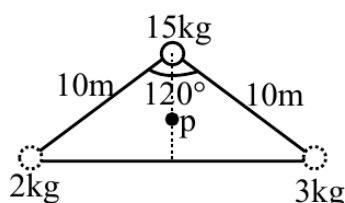
- (1) $0.128 \pi \text{ Nm}$, 100 (2) $0.0128 \pi \text{ Nm}$, 50
(3) $0.128 \pi \text{ Nm}$, 50 (4) $0.0128 \pi \text{ Nm}$, 100

32. A smooth inclined plane ends in a vertical circular loop, as shown in the figure. A small body is released from height h as shown. If the body exerts a force of three times its weight on the plane at the highest point of circle then the height $h = \alpha R$. The value of α is



- (1) 2 (2) 4
(3) 3 (4) 6

33. The position of center of mass of three masses 2 kg, 3 kg and 15 kg placed with respect to mid point (p) of normal bisector, as shown in the figure is ____.

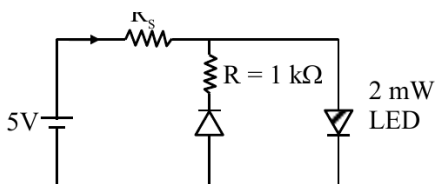


- (1) $(\sqrt{3}/4, 1.25)$ (2) $(\sqrt{3}/4, 1.0)$
(3) (0, 0) (4) (1.25, 0)

34. The two wires A and B of equal cross-section but of different materials are joined together. The ratio of Young's modulus of wire A and wire B is 20/11. When the joined wire is kept under certain tension the elongations in the wires A and B are equal. If the length of wire A is 2.2 m, then the length of wire B is ____ m.

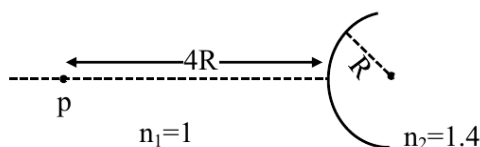
- (1) 1.1 (2) 2.22
(3) 1.21 (4) 4.44

- 35.** Two closed vessels of same volume are joined through a narrow tube and both vessels are filled with air of pressure 90 kPa and temperature 400 K. Keeping the temperature of one vessel constant at 400 K the second vessel temperature is raised to 500 K. The final pressure in the vessels is ____ kPa.
- (1) 100 (2) 120
(3) 90 (4) 105
- 36.** In interference experiment the path difference between two interfering waves at a point A on the screen is $\lambda/3$, where λ is the wavelength of these waves, and at another point B the path difference is $\lambda/6$. The ratio of intensities at points A and B is ____ .
- (1) 3 (2) 4
(3) $1/3$ (4) $1/4$
- 37.** A particle is executing simple harmonic motion. Its amplitude is A and time period is 5 sec. The time required by it to move from $x = A$ to $x = A/\sqrt{2}$ is ____ sec.
- (1) $1/4$ (2) $5/4$
(3) $5/8$ (4) $3/8$
- 38.** A thin half ring of radius 35 cm is uniformly charged with a total charge of Q coulomb. If the magnitude of the electric field at centre of the half ring is 100 V/m, then the value of Q is ____ nC. ($\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2/\text{Nm}^2$ and $\pi = 3.14$)
- (1) 2.14 (2) 2.44
(3) 3.25 (4) 0.7
- 39.** The maximum rated power of the LED is 2 mW and it is used in the circuit with input voltage of 5 V as shown in the figure below. The current through resistance R_s is 0.5 mA. The minimum value of the resistance of R_s , to ensure that the LED is not damaged is ____ k Ω .

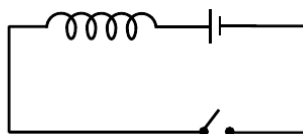


- (1) 6 (2) 2
(3) 4 (4) 5
- 40.** A point light source emits E.M. waves in free space. A detector, placed at a distance of L m, measures the intensity as I_0 . The detector is now shifted to another location on the same spherical surface ensuring the angle between original location and new location as 45° . The measured intensity at new location will be ____.
- (1) $I_0/4$ (2) I_0
(3) $I_0/\sqrt{2}$ (4) $I_0/2$

41. A spherical interface lens of radius R separates two media of refractive indices 1 and 1.4 respectively as shown in the figure below. A point source is placed at a distance of $4R$ in front of spherical interface. The magnitude of the magnification of point source image is _____.



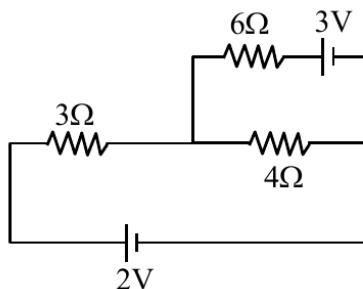
- (1) 1.66 (2) 2.33
(3) 2.66 (4) 1.33
42. A small cube of side 1 mm is placed at the centre of a circular loop of radius 10 cm carrying a current of 2 A. The magnetic energy stored inside the cube is $\alpha \times 10^{-14}$ J. The value of α is _____. ($\mu_0 = 4\pi \times 10^{-7}$ Tm/A, $\pi = 3.14$)
- (1) 6.28 (2) 6.28×10^{-6}
(3) 628 (4) 6.28×10^{-4}
43. An inductor of inductance 10 mH having resistance of 100Ω is connected to battery of E.M.F. 1.0 V through a switch as shown in the figure below. After switch is closed, the ratio of instantaneous voltages across the inductor when the current passing through it is 2 mA and 4 mA is _____.



- (1) 4/3 (2) 3/4
(3) 5/3 (4) 3/5
44. The ratio of momentum of the photons of the 1st and 2nd line of Balmer series of Hydrogen atoms is α/β . The possible values of α and β are :-
- (1) 27 and 20 (2) 3 and 16
(3) 5 and 36 (4) 20 and 27
45. A LCR series circuit driven with $E_{\text{rms}} = 90$ V at frequency $f_d = 30$ Hz has resistance $R = 80 \Omega$, an inductance with inductive reactance $X_L = 20.0 \Omega$ and capacitance with capacitive reactance $X_C = 80.0 \Omega$. The power factor of the circuit is _____.
- (1) 0.8 (2) 0.64
(3) 0.9 (4) 0.5

SECTION-B

46. Refer to the circuit diagram given below. The heat generated across the $6\ \Omega$ resistance in 100 second is $\alpha/100$ J. The value of α is _____. (Nearest integer)



47. An unpolarized light of intensity I_0 passes through polarizer and then through a certain optically active solution and finally it goes to analyser. If the angle between analyser and polariser is 0° and intensity of light emerged from analyser is $(3/8) I_0$, the angle of rotation of the light by the solution with respect to analyser is _____ degrees.
48. The energy released when $(7/17.13)$ kg of ${}^7_3\text{Li}$ is converted into ${}^4_2\text{He}$ by proton bombardment is $\alpha \times 10^{32}$ eV. The value of α is _____. (Nearest integer)
(Mass of ${}^7_3\text{Li} = 7.0183$ u, mass of ${}^4_2\text{He} = 4.004$ u, mass of proton = 1.008 u and $1\text{ u} = 931\text{ MeV}/c^2$ and Avogadro number = 6.0×10^{23})
49. A three coulomb charge moves from the point (0, -2, -5) to the point (5, 1, 2) in an electric field expressed as $\mathbf{E} = 2x\mathbf{i} + 3y^2\mathbf{j} + 4z\mathbf{k}$ N/C ($\mathbf{i}, \mathbf{j}, \mathbf{k}$ are unit vectors along x, y, z). The work done in moving the charge is _____ J.
50. A certain gas is isothermally compressed to $(1/3)^{\text{rd}}$ of its initial volume ($V_0 = 3$ litre) by applying required pressure. If the bulk modulus of the gas is $3 \times 10^5\text{ N/m}^2$, the magnitude of work done on the gas is _____ J.