



Learn Physics in Right Way



Physics by fiziks
IIT-JAM Physics

Question Paper -2026

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Section A: Q1-Q10 Carry ONE mark each.

Q1. Light of wavelength 632 nm is passing through an optically active medium of thickness 20 cm . The optical rotation exhibited by the medium is 18° . Which of the following options correctly states the magnitude of the difference in refractive indices corresponding to the left and the right circularly polarized light?

- (a) 1.81×10^{-5} (b) 3.16×10^{-7}
(c) 3.62×10^{-5} (d) 6.32×10^{-7}

Ans.: (b)

Q2. Consider an n -type silicon in which the fully ionized dopant concentration is 10^{17} cm^{-3} . The intrinsic electron density is $1.5 \times 10^{10}\text{ cm}^{-3}$. Which of the following options correctly states the equilibrium hole concentration in cm^{-3} ?

- (a) 2.25×10^3 (b) 1.55×10^3
(c) 3.01×10^3 (d) 4.52×10^3

Ans.: (a)

Q3. Consider the superposition of two electromagnetic waves with their electric field vectors given by $\vec{E}_1(z,t) = \hat{i}A_1 \cos(kz - \omega t)$ and $\vec{E}_2(z,t) = \hat{j}A_2 \sin(kz - \omega t + \phi)$, where A_1 and A_2 are the amplitudes, k is the wavenumber, ω is the angular frequency, and ϕ is the relative phase. Which of the following options represents a resultant elliptically polarized wave with its semi-major axis either along \hat{i} or \hat{j} ?

- (a) $\phi = 0$ and $A_1 \neq A_2$ (b) $\phi = \frac{\pi}{2}$ and $A_1 = A_2$
(c) $\phi = \frac{\pi}{2}$ and $A_1 \neq A_2$ (d) $\phi = 0$ and $A_1 = A_2$

Ans.: (a)

Q4. Which of the following options represents the simplified form of the Boolean equation $Y = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC$

- (a) $A\bar{B}$ (b) $\bar{A}B\bar{C}$
(c) $\bar{B}C$ (d) \bar{C}

Ans.: (d)

Q5. A quantum particle is confined in a one-dimensional space of $0 \leq x \leq 2$. Consider a normalized wavefunction of the particle as

$$\psi(x) = \sqrt{p/5} [1 + \cos(\pi x/2)] \sin(\pi x/2)$$

Which of the following options gives the correct value of p ?

- (a) 2 (b) 3
(c) 4 (d) 1

Ans.: (c)

Q6. Consider the normalized superposed state $\psi = c_0\phi_0 + c_1\phi_1$, where ϕ_0 and ϕ_1 are the ground and first excited states of a simple harmonic oscillator, respectively. c_0 and c_1 are imaginary superposition coefficients. Which of the following options is correct for the expectation value of $(\langle x \rangle + i\langle p \rangle)$?

- (a) Imaginary (b) Real
(c) Zero (d) Complex with non-zero real and imaginary parts

Ans.: (b)

Q7. The potential of a quantum harmonic oscillator is modified from $\frac{1}{2}kx^2$ to $\frac{1}{2}kx^2 + 3ax$, where k and a are constants and x is the position variable. When, the values of $a = 2$ and $k = 1$, which of the following options gives the change in the ground state energy?

(a and k are in appropriate units)

- (a) -3 (b) -6
(c) -12 (d) -18

Ans.: (d)

Q8. Consider the following linear second order differential equation $\frac{d^2y}{dt^2} + \omega^2 y = 0$, where ω is positive constant. The boundary conditions are $\left. \frac{dy}{dt} \right|_{t=0} = 1$, and $y(t=0) = \frac{1}{2}$.

Which of the following options gives the value of $y\left(t = \frac{\pi}{2\omega}\right)$?

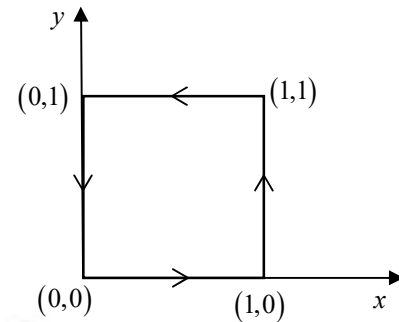
- (a) $\frac{1}{\omega}$ (b) $\frac{2\pi}{\omega}$
(c) 0 (d) 1

Ans.: (a)

Q9. Consider the electrostatic potential in two dimensions $V(x,y) = x^8 y^9$. What is the line integral of the corresponding electric field along the path shown in the figure?

- (a) 0
- (b) 1
- (c) 2
- (d) $\frac{1}{2}$

Ans.: (a)



Q10. Consider the matrix $A = \begin{pmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix}$

The value of $\det(A^{-1})$ is:

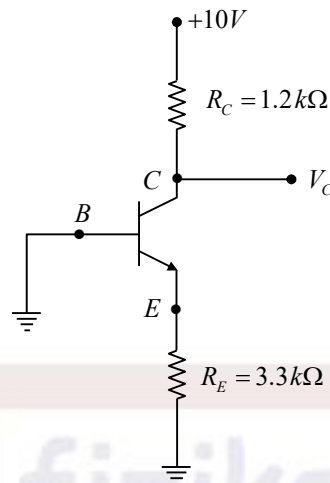
- (a) 4
- (b) 1
- (c) $\frac{1}{4}$
- (d) 0

Ans.: (b)

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Section A: Q11-Q30 Carry TWO marks each.

Q11. Consider the circuit of the figure, the voltage V_C , in Volts, is:



- (a) 0
(b) 1.25
(c) 9.8
(d) 10

Ans.: (d)

Q12. A particle of mass m moves in a potential given by

$$V(x, y, z) = -k \frac{y}{(x^2 + y^2 + z^2)},$$

where k is a constant.

Which of the following statements is correct?

- (a) The force corresponding to the potential is central
(b) Angular momentum of the system is not conserved
(c) Linear momentum along the y -direction is conserved
(d) Energy of the system is not conserved

Ans.: (b)

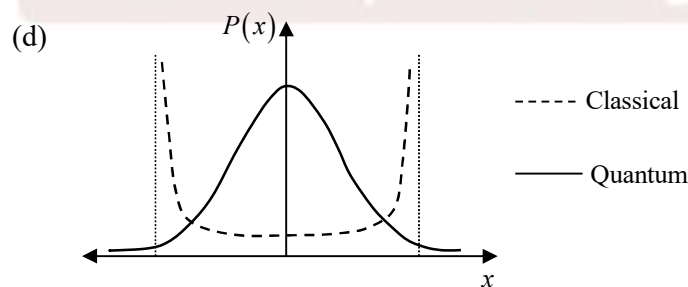
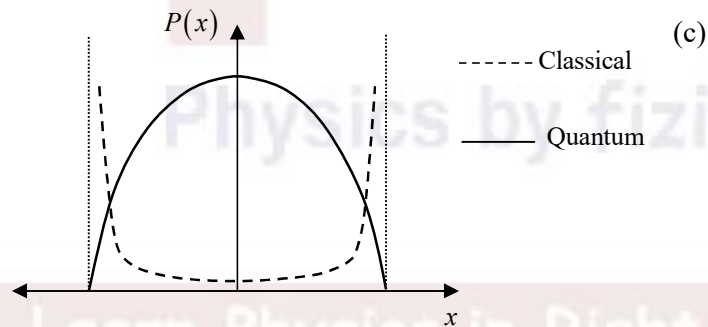
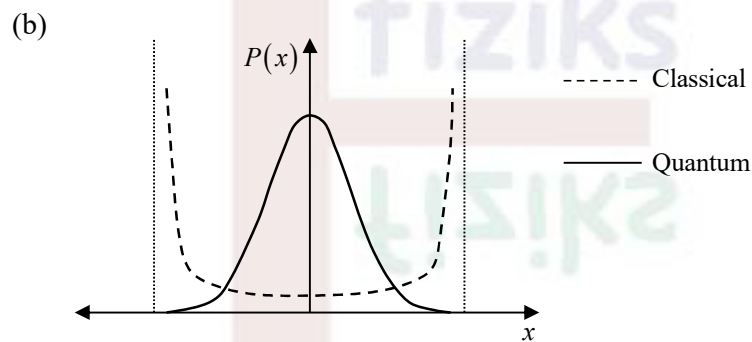
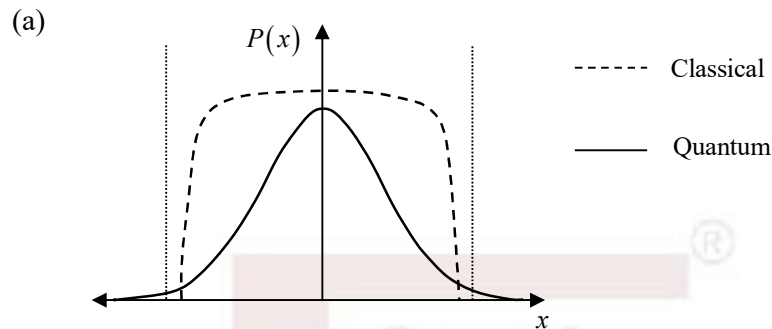
Q13. (\vec{E}, \vec{B}) are the electric and magnetic fields in a rest frame. (\vec{E}', \vec{B}') represent the corresponding quantities in a reference frame moving with a constant velocity \vec{v}_0 . Using the invariance of Lorentz force $\vec{F} = q\vec{E} + q\vec{v} \times \vec{B}$ under Galilean transformations, identify the correct relation.

- (a) $\vec{E}' = \vec{E}$ and $\vec{B}' = \vec{B}$
(b) $\vec{E}' = \vec{E} + \vec{v}_0 \times \vec{B}$ and $\vec{B}' = \vec{B}$
(c) $\vec{E}' = \vec{E}$ and $\vec{v} \times \vec{B}' = (\vec{v} + \vec{v}_0) \times \vec{B}$
(d) $\vec{E}' = \vec{v}_0 \times \vec{B}$ and $\vec{v} \times \vec{B}' = \vec{E} + \vec{v} \times \vec{B}$

Ans.: (b)

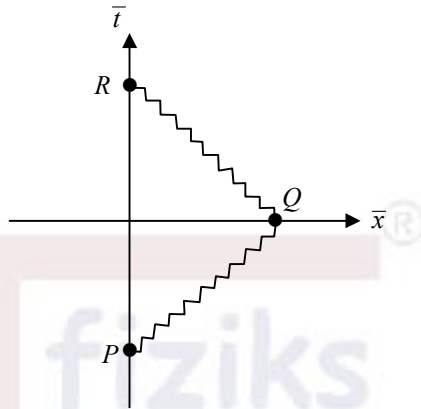
Q14. Which ONE of the following figures correctly represents the probability density, $P(x)$, of a particle undergoing simple harmonic oscillation as a function of position x ?

The dashed line is for the classical case. The solid line is for the quantum case, where the system is in its ground state. The vertical lines on the x axis denote the classical turning points.



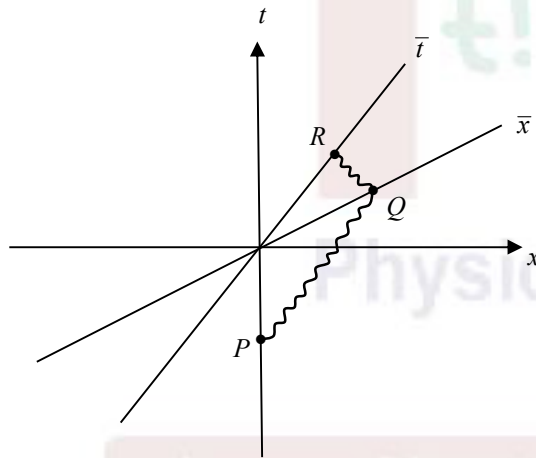
Ans.: (d)

Q15. An observer $\bar{O}(\bar{t}, \bar{x})$ moves with a constant velocity in the positive x -direction relative to an observer $O(t, x)$ at rest. In the frame of reference of $\bar{O}(\bar{t}, \bar{x})$, a light-ray emitted at a point P at some time reaches the \bar{x} -axis at the point Q . Then, on reflection it arrives at point R , as shown in the figure.

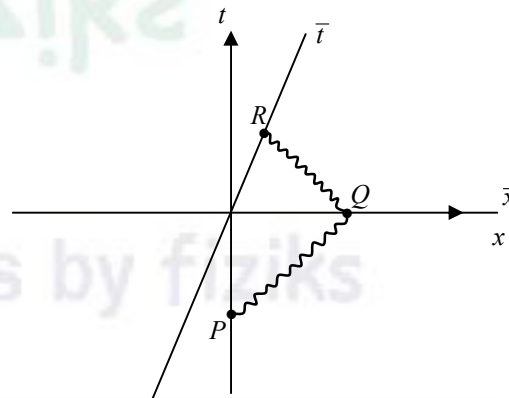


Which of the following options represents these events as observed by $O(t, x)$?

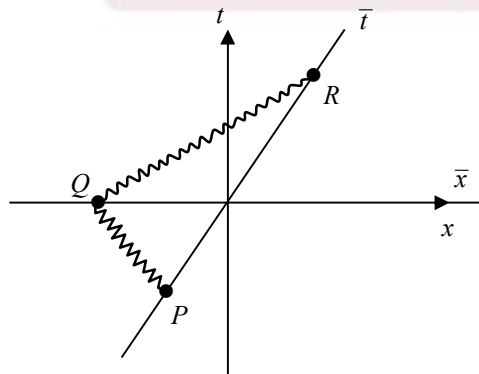
(a)



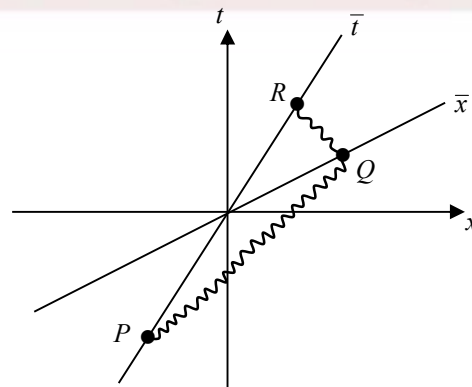
(b)



(c)

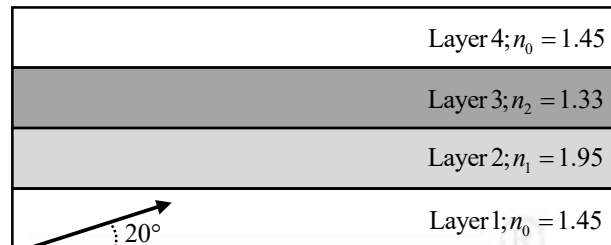


(d)



Ans.: (d)

Q16. Consider a multilayered structure composed of thin films of refractive indices n_0, n_1 , and n_2 as shown in the figure. A ray traveling in the first layer hits the interface at an angle of 20° with the horizontal. Which of the following options is correct?



- (a) The ray emerges at an angle of 20° with the horizontal in the 4th layer
 (b) The ray emerges at an angle of 56° with the horizontal in the 4th layer
 (c) The ray would not enter the 3rd layer
 (d) The ray emerges at an angle of 44° with the horizontal in the 4th layer

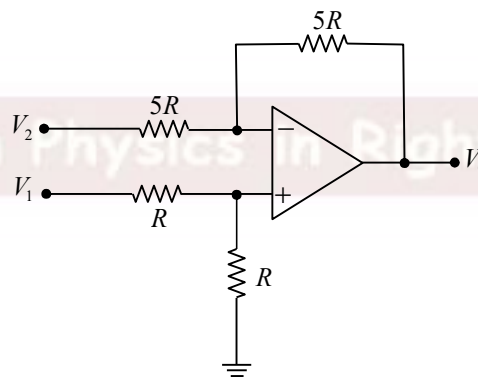
Ans.: (c)

Q17. Consider a BCC lattice with one atom per lattice point. The maximum packing fraction is close to:

- (a) 53% (b) 68%
 (c) 74% (d) 81%

Ans.: (b)

Q18. The output voltage V_0 for the circuit shown in the figure is:



- (a) $(V_1 - V_2)$ (b) $(V_1 - 2V_2)$
 (c) $(V_2 - V_1)$ (d) $2(V_1 - V_2)$

Ans.: (a)

Q19. A quantum particle of mass 10^{-20} kg is confined within a length of 1 nm in one-dimension. The minimum uncertainty in the measurement of velocity of the particle, in units of $\mu\text{m/s}$, rounded off to the nearest integer is:

[Assume the minimum uncertainty product $\Delta x \Delta p_x \approx \frac{\hbar}{2}$, use Planck's constant $h = 6.64 \times 10^{-34} \text{ Js}$]

- (a) 2 (b) 5
(c) 10 (d) 1

Ans.: (b)

Q20. A thin ring of mass m and radius R has a total charge Q distributed uniformly. The ring is rotating with a constant angular velocity ω about an axis passing through its center and perpendicular to its plane. Which of the following options is correct?

- (a) The magnetic moment of the ring is $\frac{Q\omega R^2}{4}$
(b) The ratio of the magnetic moment to angular momentum is $\frac{Q}{2m}$
(c) The magnetic moment of the ring is $\frac{Q\omega R^2}{6}$
(d) The ratio of the magnetic moment to angular momentum is $\frac{Q}{m}$

Ans.: (b)

Q21. A mass attached to the bottom end of a vertical massless spring stretches the spring by Δx . The system executes oscillation with a time period $T = 0.2 \text{ s}$. The value of Δx , in cm , rounded off to the nearest integer is:

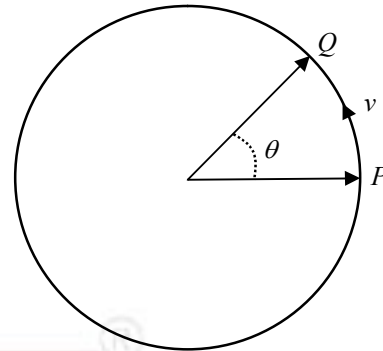
[Assume the acceleration due to gravity $g = 9.8 \text{ m/s}^2$]

- (a) 2 (b) 3
(c) 4 (d) 1

Ans.: (d)

Q22. A particle is rotating along a circular path with uniform speed v , as shown in the figure. While moving from the point P to Q subtending an angle θ , the magnitude of the change in its velocity is:

- (a) zero
 (b) $v \cos \theta$
 (c) $2v \sin \frac{\theta}{2}$
 (d) $v \cos \frac{\theta}{2}$



Ans.: (c)

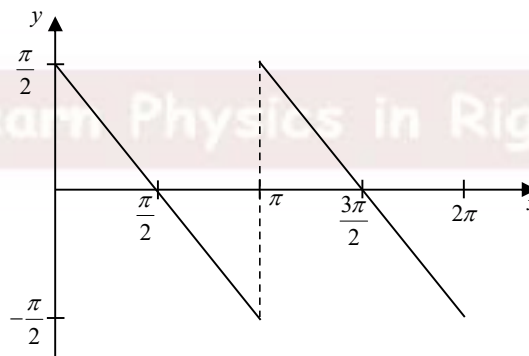
Q23. A series LCR circuit contains $L = 175 \text{ mH}$, $C = 62.5 \mu\text{F}$, and $R = 40 \Omega$ and is connected to a source of voltage amplitude $E_0 = 50 \text{ V}$ and angular frequency $\omega = 400 \text{ rad/s}$.

Which of the following statements is correct?

- (a) The magnitude of the maximum voltage across the inductor is less than 50 V
 (b) The magnitude of the maximum voltage across the capacitor is more than 60 V
 (c) The magnitude of the maximum voltage across the resistor is 50 V
 (d) The magnitude of the maximum voltage across the capacitor equals the maximum voltage across the resistor

Ans.: (d)

Q24. A piecewise regular function $f(x)$ is shown in the figure. It is expanded in Fourier series given by $f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos(nx) + \sum_{n=1}^{\infty} b_n \sin(nx)$ where a_0, a_n, b_n 's are the Fourier coefficients.



Which of the following options is correct?

- (a) $a_0 = 3\pi$
 (b) All a_n are zero
 (c) All b_n are zero
 (d) $a_0 = \frac{3\pi}{2}$

Ans.: (b)

Q25. Using Taylor series, expand $f(x) = x^3 - \frac{1}{8}$ around $x_0 = 1$ up to second order in x . The coefficient of x is:

- (a) -2 (b) 3
(c) 2 (d) -3

Ans.: (d)

Q26. Consider a 2×2 matrix A . The determinant of A is -1 and the trace(A) = 1 . Which of the following options gives the eigenvalues of A ?

- (a) 1, 0 (b) $\frac{1+\sqrt{5}}{2}, \frac{1-\sqrt{5}}{2}$
(c) $\frac{1+\sqrt{5}}{4}, \frac{1-\sqrt{5}}{4}$ (d) $\frac{\sqrt{5}}{2}, 1 - \frac{\sqrt{5}}{2}$

Ans.: (b)

Q27. Consider the following vector $\vec{V} = xyz\hat{k}$. Which of the following statements is correct for the resultant vector $\vec{V} \times \vec{V} \times \vec{V}$?

- (a) It lies in xy -plane
(b) It lies in yz -plane
(c) It lies in xz -plane
(d) It is along the x direction

Ans.: (a)

Q28. Two coherent plane waves having wavelength λ and wavevectors

$$\vec{k}_1 = \frac{2\pi}{\lambda} \left(\frac{1}{2}\hat{i} - \frac{\sqrt{3}}{2}\hat{j} \right) \text{ and } \vec{k}_2 = \frac{2\pi}{\lambda} \left(-\frac{1}{2}\hat{i} - \frac{\sqrt{3}}{2}\hat{j} \right),$$

are incident on a screen placed on the xz -plane. The overlap of the waves on the plane of the screen produces interference fringes.

The fringe width (center-to-center spacing of bright fringes) will be:

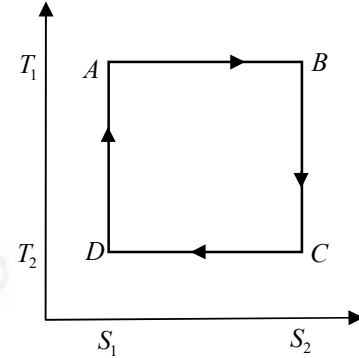
- (a) $\frac{\lambda}{2}$ (b) 2λ
(c) $\frac{\sqrt{3}\lambda}{2}$ (d) λ

Ans.: (d)

Q29. Consider a Carnot cycle as shown in the figure. The ideal gas expanded from volume V_1 to V_2 along the path AB . During this process, the temperature T_1 is constant and the entropy changes from S_1 to S_2 . T_2 is the temperature of the cold bath.

Which of the following statements is correct?

- (a) Work done along the path AB is $W_{AB} = -NRT_1 \ln \frac{V_2}{V_1}$
- (b) Work done along the path BC is $W_{BC} = 0$
- (c) Work done along the path CD is $W_{CD} = -NRT_1 \ln \frac{V_2}{V_1}$
- (d) Work done along the path DA is $W_{DA} = 0$



Ans.: (a)

Q30. The speed of an object of mass 20 kg increases from 2 m/s to 6 m/s in 10 s . The power required, in Watts, is:

- (a) 64 (b) 54
- (c) 32 (d) 72

Ans.: (c)

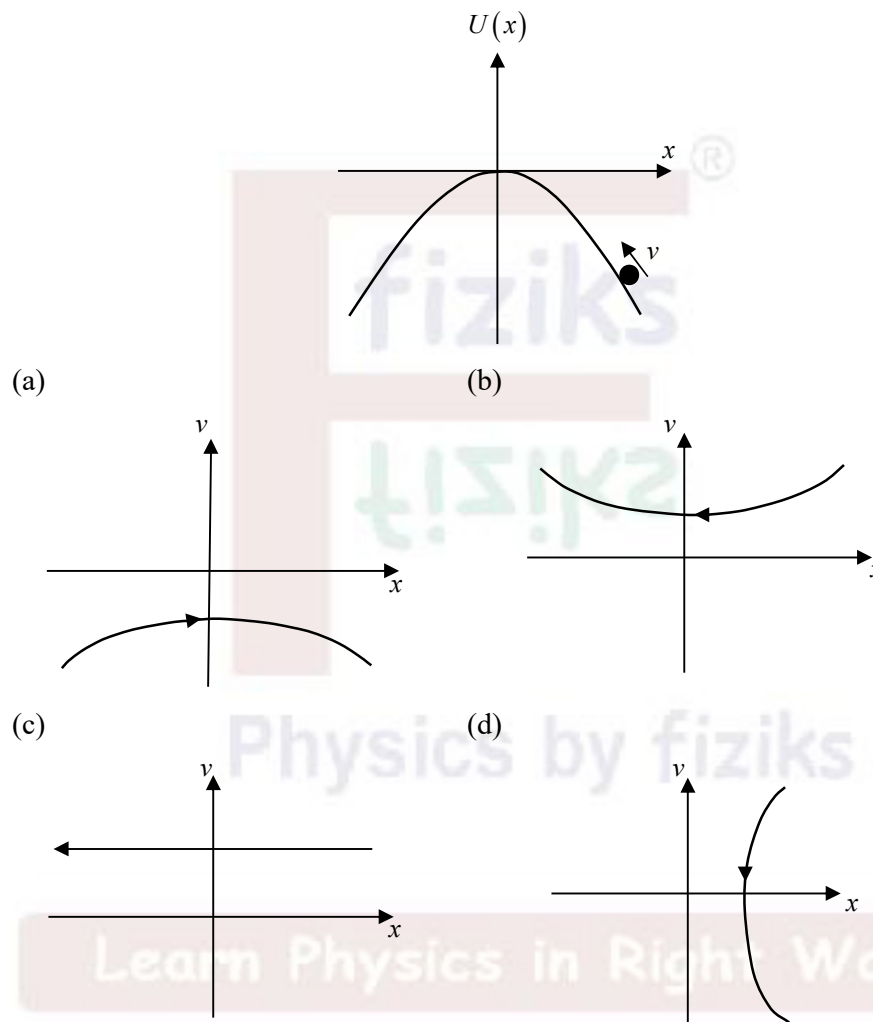
Section B: Q31-Q40 Carry TWO marks each.

Q31. The displacement of a vibrating string of finite length stretched along the x -axis is given by $y(x,t) = 2A \cos(kx) \sin(\omega t)$ where, A is the amplitude, $k = 2\pi/\lambda$ is the wavenumber and ω is the angular frequency. Which of the following statements is/are correct for the standing wave?

- (a) The nodes are at $x = n \frac{\lambda}{2}$, where n is an integer
- (b) The antinodes are at $x = \left(n + \frac{1}{2}\right) \frac{\lambda}{2}$, where n is an integer
- (c) The nodes are at $x = \left(n + \frac{1}{2}\right) \frac{\lambda}{2}$, where n is an integer
- (d) The antinodes are at $x = n \frac{\lambda}{2}$, where n is an integer

Ans.: (c), (d)

Q35. A ball of mass m climbs the potential $U(x) = -\frac{1}{2}kx^2$, as shown in the figure. Assuming that the total energy of the system $E = \frac{1}{2}mv^2 + U(x)$ is conserved, which of the following correctly describe(s) the plot of velocity (v) as a function of position (x) of the system for $E < 0$?



Ans.: (d)

Q36. An LC oscillator circuit contains a capacitor of $4.0 \mu F$. The maximum potential difference across the capacitor is $2V$ and the maximum current through the inductor is $80 mA$.

Which of the following statements is/are correct?

- (a) The value of inductance is $2.5 mH$
- (b) The frequency of oscillator is $3.2 kHz$
- (c) The time for the charge in the capacitor to rise from zero to the maximum is nearly $0.157 ms$
- (d) The maximum potential difference across the inductor is $2.0V$

Ans.: (a), (c), (d)

Q37. Consider an ideal gas of entropy S , molar specific heat C_v , pressure P and volume V .

Which of the following options is/are true?

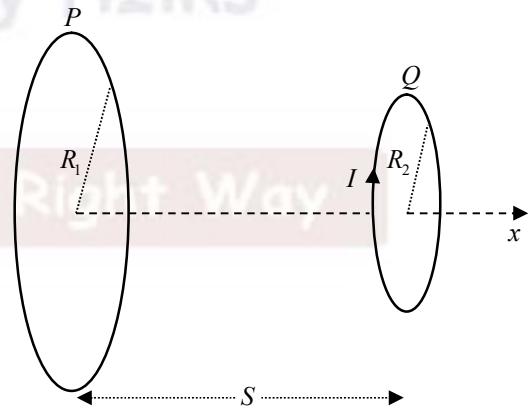
- (a) Internal energy of the gas depends only on the temperature
- (b) $S \propto \ln V$, assuming C_v is constant
- (c) $S = 0$
- (d) Internal energy of the gas depends both on temperature and pressure

Ans.: (a), (b)

Q38. Two small circular copper loops P and Q of radii R_1 and R_2 , respectively, are coaxially placed along the x -axis as shown in the figure. The loops are at a distance s apart, where $s \gg R_1, R_2$. The loop Q carrying a steady current I is moving away along x -axis with a speed v . Which of the following statements is/are correct?

- (a) The magnetic field at the center of P is $\propto \frac{1}{s^2}$
- (b) The magnetic flux through the loop P is $\propto \frac{1}{s^2}$
- (c) The emf induced in the loop P is $\propto \frac{1}{s^4}$
- (d) The emf induced in the loop P is v^2

Ans.: (c)



Q39. A charge Q is distributed uniformly on the surface of a sphere of radius R . It is placed inside a concentric conducting hollow sphere of radius $2R$. The outer sphere is earthed.

Which of the following statements is/are correct?

- (a) The charge on the inner surface of the outer sphere is $-Q$
- (b) The flux through a closed surface through the material of the outer sphere is $\frac{Q}{\epsilon_0}$
- (c) The charge on the outer surface of the outer sphere is zero
- (d) The potential at a radial distance r between the two spheres, $R < r < 2R$, is $\frac{1}{4\pi\epsilon_0} \frac{Q}{r}$

Ans.: (a), (c)

Q40. Which of the following statements is/are true for a first order phase transition?

[C_p is the molar heat capacity, T_c is the critical temperature and S is the entropy]

- (a) At the transition point $C_p \rightarrow \infty$
- (b) The derivative of the Gibbs function with respect to pressure changes continuously across the phase transition
- (c) The two thermodynamic states between which the transition takes place are distinct
- (d) Entropy changes discontinuously with temperature at T_c

Ans.: (a), (c), (d)

Section C: Q41-Q50 Carry ONE mark each.

Q41. Considering the diameter of the pupil of a human eye to be 2 mm , the angular resolution of the eye at a wavelength of 500 nm , in minute of arc, is _____.

(Rounded off to two decimal places)

Ans.: 1.01 to 1.11

Q42. Consider a 10 mW laser beam focused using a biconvex lens to a circular spot of area 10^{-10} m^2 . The magnitude of the electric field in the focal plane of the lens, in kV/m , is _____.

(Rounded off to one decimal place)

[Use permittivity of free space $\epsilon_0 = 8.854 \times 10^{-12}\text{ C}^2/(\text{Nm}^2)$, and speed of light $c = 3 \times 10^8\text{ m/s}$]

Ans.: 273.0 to 276.0

Q43. An OP-AMP has differential gain of $A_d = 4000$, two input voltages $V_{i1} = 120 \mu V$ and $V_{i2} = 80 \mu V$, and CMRR = 100. The output voltage, in mV , is _____. (Answer in integer)

Ans.: 160 to 170

Q44. A particle of mass $10^{-20} kg$ is moving along a circular orbit of radius $1 nm$. The speed of the particle corresponds to the average thermal energy at temperature $10^{-6} K$. Assuming the Bohr's angular momentum quantization condition, the quantum number of the circular path of the particle is _____. (Answer in integer)

[Use $h = 6.64 \times 10^{-34} J s$ and $k_B = 1.38 \times 10^{-23} J/K$]

Ans.: 6

Q45. One mole of an ideal gas undergoes a reversible isothermal expansion from $V_i = 1.5 \times 10^{-5} m^3$ to $V_f = 1.6 \times 10^{-5} m^3$ at a temperature $273 K$. The amount of heat transfer during the process is αR , where R is the gas constant. The value of α is _____.

(Rounded off to one decimal place)

Ans.: 16.5 to 18.5

Q46. The value of $(1 - i\sqrt{3})^3$ is _____. (Answer in integer)

Ans.: -8

Q47. Two thermodynamic systems separated by diathermic wall have the equations of state

$U_1 = \frac{3}{2} RN_1 T_1$ and $U_2 = \frac{5}{2} RN_2 T_2$, where R is the gas constant. N_1, N_2 and T_1, T_2 are the mole numbers and the temperature of the two systems, respectively. The composite system in equilibrium has the total energy 1.5×10^3 Joule. If $N_1 = 3$ and $N_2 = 2$, then the internal energy U_1 of the system one is _____. (Answer in integer)

Ans.: 709 to 712

Q48. Light of wavelength $500 nm$ is incident on the surface of Na metal for photoelectric emission. The corresponding threshold wavelength is $600 nm$. The maximum kinetic energy of the emitted electron, in eV , is _____.

(Rounded off to two decimal places)

[Use Planck's constant $h = 6.625 \times 10^{-34} J s$, speed of light $c = 3 \times 10^8 m/s$, charge of electron $e = 1.6 \times 10^{-19} C$]

Ans.: 0.38 to 0.44

Q49. The first order Bragg peak for (100) plane of a material with simple cubic structure is measured using an X-ray of wavelength 1\AA . If the lattice constant is 5\AA then the Bragg peak is observed at an angle, in degrees, _____. (*Rounded off to two decimal places*)

Ans.: 5.55 to 5.95

Q50. Consider an ensemble of hydrogen gas. The temperature, in K, at which the *rms* speed of the hydrogen molecule is twice the *rms* speed of the molecule at 300 K is _____.

(*Answer in integer*)

Ans.: 1200



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Section C: Q51-Q60 Carry TWO marks each.

Q51. A particle of mass m undergoes periodic motion in one-dimension with its total energy given as $E = \frac{1}{2}m\dot{x}^2 + \frac{1}{4}kx^4$, where k is a positive constant and $\dot{x} = \frac{dx}{dt}$. Assuming that E is conserved, the time period T has the relation $T \propto E^{-1/n}$. The value of n is _____.

(Answer in integer)

Ans.: 4

Q52. A spacecraft is placed 200 km above Earth in a circular orbit. The minimum change in the speed required to place the spacecraft in a parabolic orbit, in km/s , is _____.

(Rounded off to one decimal place)

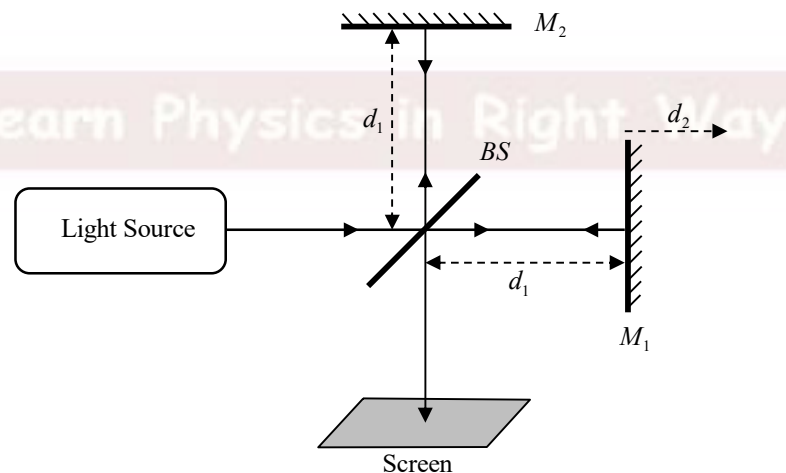
[Use $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$, mass of Earth = $6 \times 10^{24} \text{ kg}$, radius of Earth = 6400 km]

Ans.: 3.0 to 3.5

Q53. Consider a light source having a spectral linewidth of 10^{10} Hz , used in a Michelson interferometer. The mirrors M_1 and M_2 are equidistant from the beam-splitter of negligible thickness as shown in the figure. The minimum distance d_2 that the mirror M_1 is to be moved for the interference pattern to completely disappear, in cm , is _____.

(Rounded off to one decimal place)

[Use speed of light to be $3 \times 10^8 \text{ m/s}$]



Ans.: 1.5

Q54. Muons are unstable relativistic particles created at high altitudes above the Earth, having a lifetime of $2.2 \times 10^{-6} s$ in their rest frame. As measured by an observer on the ground, the minimum velocity the muon requires to travel a distance of $6000 m$ is v . The value of v/c is _____. (Rounded off to three decimal places)

[Speed of light $c = 3 \times 10^8 m/s$]

Ans.: 0.992 to 0.997

Q55. On the surface of a thin water film of refractive index 1.33, two light beams of wavelength $\lambda_1 = 0.64 \mu m$ and $\lambda_2 = 0.40 \mu m$ are incident at an angle of 30° . The light of wavelength λ_1 exhibits maximum reflection, but that of wavelength λ_2 is not reflected at all. The minimum thickness of the water film, in μm , is _____. (Rounded off to two decimal places)

[Assume refractive index is independent of wavelength]

Ans.: 0.61 to 0.71

Q56. An electron is confined in a one-dimensional box of width $L = 10 \text{ \AA}$. The electron in the first excited state de-excites to the ground state. The wavelength of the emitted radiation, in μm , is _____. (Rounded off to one decimal place)

[Use the mass of the electron $m_e = 9.1 \times 10^{-31} kg$, Planck's constant $h = 6.625 \times 10^{-34} J s$, $c = 3 \times 10^8 m/s$]

Ans.: 0.9 to 1.3

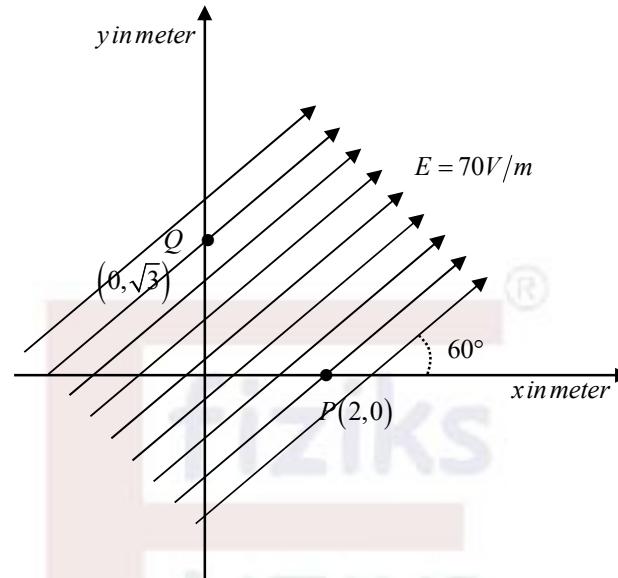
Q57. An electron is accelerated through a potential of 200 V and then it passes through a slit of width $1.0 nm$ held normal to the path of the electron. Assuming the uncertainty relation $\Delta x \Delta p_x \approx \hbar/2$, maximum scattering angle of the electron after the slit is $\alpha \times 10^{-3} \text{ radian}$.

The value of α is _____. (Rounded off to nearest integer)

Given $\hbar = 1.054 \times 10^{-34} J s$

Ans.: 6.6 to 7.4

Q58. A uniform electric field of 70 V/m makes an angle of 60° with the positive x -axis, as shown in the figure. The potential difference between the points P and Q which are 2 m and $\sqrt{3}\text{ m}$ away from the origin, in Volts, is _____. (Rounded off to one decimal place)



Ans.: 34.5 to 35.5

Q59. Consider a simple pendulum of length l and time period T . In a laboratory experiment, the time for 100 oscillations is measured to be 80 s using a stop-watch with least count 1 s . The gravitational constant is known with a percentage error of 2.5% .

The percentage error in the measured length of the pendulum, in %, is _____.

(Answer in integer)

Ans.: 5

Q60. A particle of mass m in a potential $V(x) = \frac{1}{2}kx^2$ is described by normalized

wavefunction $\sum_{n=0}^{\infty} (\sqrt{2})^{-(n+1)} \phi_n(x)$, where $\{\phi_n\}$ are the eigenstates of the particle. The energy

corresponding to the wavefunction, in units of $\frac{h}{\pi} \sqrt{\frac{k}{m}}$, is _____.

(Rounded off to two decimal places)

[Given: $\sum_{n=0}^{\infty} (a)^{-n} = \frac{a}{a-1}, a > 1$]

Ans.: 0.75