Target IIT-JAM-2018

Test Series-6

Booklet Code: F

FULL LENGTH TEST SERIES-3

Duration: 3:00 Hours | **PHYSICS-PH** | **Date: 28-01-2018**

Maximum Marks: 100

Read the following instructions carefully:

1. Attempt all the questions.
2. **Section-A** contains **30** Multiple Choice Questions (MCQ). Each question has 4 choices (a), (b), (c) and (d), for its answer, out of which **ONLY ONE** is correct. From **Q.1 to Q.10** carries 1 Marks and **Q.11 to Q.30** carries 2 Marks each.
3. **Section-B** contains **10** Multiple Select Questions(MSQ). Each question has 4 choices (a), (b), (c) and (d) for its answer, out of which **ONE or MORE than ONE** is/are correct. For each correct answer you will be awarded **2 marks.**
4. Section-**C** contains **20** Numerical Answer Type (NAT) questions. From **Q.41 to Q.50** carries **1 Mark** each and **Q.51 to Q.60** carries **2 Marks** each. For each NAT type question, the value of answer in between 0 to 9.
5. In all sections, questions not attempted will result in zero mark. In Section–A (MCQ), wrong answer will result in negative marks. For all **1 mark** questions, **1/3 marks** will be deducted for each wrong answer. For all **2 marks** questions, **2/3 marks** will be deducted for each wrong answer. In Section–B (MSQ),there is no negative and no partial marking provisions. There is no negative marking in Section –C (NAT) as well.

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CORPORATE OFFICE :
33-35, Mall Road, G.T.B. Nagar,
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T : 011-65462244, 65662255

E: info@careerendeavour.in

REGISTERED OFFICE :
28-A/11, Jia Sarai, Near-IIT,
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Section-A : Multiple Choice Questions (MCQ)

Q.1 to Q.10 : Carry 1 Mark each.

1. If $x = r\cos\theta,\ y = r\sin\theta$, then the Jacobian of (x, y) w.r.t. (r, θ) will be

(a) 1 (b) $\frac{1}{r}$ (c) r^2 (d) r

2. A particle of mass *m* and energy *E*, moving in the positive *x*-direction, is incident on a step potential at $x = 0$. The height of the potential is $V_0\ (E < V_0)$. At $x = x_0$, the probability of finding the particle the electron is 1/e times of the probability of finding it at *x* = 0. If $\alpha = \sqrt{\frac{2m(V_0 - E)}{\hbar^2}}$, then the value of x_0 is

(a) $\frac{2}{\alpha}$ (b) $\frac{1}{\alpha}$ (c) $\frac{1}{2\alpha}$ (d) $\frac{1}{4\alpha}$

3. Electrons with a kinetic energy of $6.023\times10^4\ J/mol$ are evolved from the surface of a metal, when exposed to a radiation of wavelength of 600 nm. The minimum amount of energy required to remove an electron from the metal atom is

(a) $2.31\times10^{-19}\ J$ (b) $3.31\times10^{-19}\ J$ (c) $6.62\times10^{-19}\ J$ (d) $6.62\times10^{-34}\ J$

4. The uncertainity principle for a free particle in one dimension can be written as (Symbols have their usual meaning)

(a) $\Delta x\,\Delta\lambda \geq \frac{\hbar}{2}$ (b) $\Delta x\,\Delta\lambda \geq \frac{\lambda^2}{4\pi}$ (c) $\Delta x\,\Delta\lambda \geq \frac{\lambda}{4\pi}$ (d) $\Delta x\,\Delta\lambda \geq \lambda^2$

5. A particle of unit mass moves in elliptical path $\frac{x^2}{4} + y^2 = 1$ under the action of force $\vec{F} = -\left(16x\hat{i} + 25y\hat{j}\right)$. If speed of particle at $\left(1, \frac{\sqrt{3}}{2}\right)$ is 1 then its speed at (0, 1) will be

(a) $\frac{\sqrt{61}}{2}$ (b) $\frac{\sqrt{43}}{2}$ (c) $\frac{\sqrt{65}}{2}$ (d) $\frac{\sqrt{78}}{2}$

6. A particle is thrown with speed 10 m/s at 45º to horizontal. Another particle of same mass is thrown 1 sec later from same point with speed 20 m/s at 45º to the horizontal. The two particles collide in air and stick to each other. How far from the point of projection the two particles fall,

(a) 10 meter (b) 40 meter (c) 50 meter (d) 25 meter

7. For an ideal fermi-gas in two dimensions, the fermi energy E_F is related to the electron concentration *n* as

(a) $E_F \propto n^{1/2}$ (b) $E_F \propto n$ (c) $E_F \propto n^{2/3}$ (d) $E_F \propto n^{1/3}$

8. A mixture of unpolarized and circularly polarized light is passed through a wave plate *X*, when the emergent light is analyzed using a nicol-prism, position of two maxima and two minima (not zero) is found. The unknown wave plate *X* is

(a) Half wave plate (b) Full wave plate (c) Quarter wave plate (d) Nicol prism

9. At 20 ºC and 750 torr pressure, the mean free paths for argon gas (Ar) and nitrogen gas (N_2) are 99 nm and 275 nm respestively. The ratio of the diameter of argon to that of nitrogen molecule is

(a) 3 : 5 (b) 5 : 3 (c) 9 : 25 (d) 25 : 9

10. A long wire lying in z-direction carries a time varying current. At some point (x, y, z) near the middle of wire which of the following is true for electric field

(a) $E_x = E_y = E_z = 0$ (b) $E_x = E_y = 0, E_z \neq 0$

(c) $E_x = E_y \neq 0, E_z = 0$ (d) $E_x \neq 0, E_y \neq 0, E_z \neq 0$

Q.11 to Q.30 : Carry 2 Marks each.

11. The value of the following limit:

$$\lim_{x \to 0} \frac{\ln(1+px) - \ln(1+qx)}{x}$$

is equal to

(a) 0 (b) $p - q$ (c) p / q (d) ∞

12. If z_1 and z_2 be two non-zero complex numbers. If $|z_1 + z_2| = |z_1| + |z_2|$, then which of the following is **CORRECT**?

(a) $\text{Re}(z_1\bar{z}_2) < 0, \text{Im}(z_1\bar{z}_2) = 0$ (b) $\text{Re}(z_1\bar{z}_2) > 0, \text{Im}(z_1\bar{z}_2) = 0$

(c) $\text{Re}(z_1\bar{z}_2) > 0, \text{Im}(z_1\bar{z}_2) > 0$ (d) $\text{Re}(z_1\bar{z}_2) < 0, \text{Im}(z_1\bar{z}_2) < 0$

13. A quantum particle of mass m is confined to a rectangular region in the x-y plane, whose vertices are given as $(0, -L), (2L, -L), (2L, L), (0, L)$. Which of the following represents an admissible wave function of ground state of the particle?

(a) $\frac{1}{L}\sin\left(\frac{\pi x}{2L}\right)\sin\left(\frac{\pi y}{2L}\right)$ (b) $\frac{1}{L}\sin\left(\frac{\pi x}{2L}\right)\cos\left(\frac{\pi y}{2L}\right)$

(c) $\frac{1}{L}\cos\left(\frac{\pi x}{2L}\right)\cos\left(\frac{\pi y}{2L}\right)$ (d) $\frac{1}{L}\cos\left(\frac{\pi x}{2L}\right)\sin\left(\frac{\pi y}{2L}\right)$

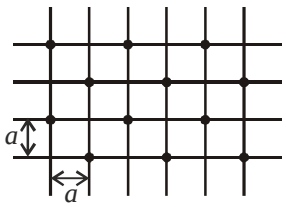
14. A particle of mass m moves under the 1-D potential $V(x) = V_0|x|$, where V_0 is a positive constant. Using Heisenberg's uncertainty principle $\Delta x\, \Delta p_x \geq \frac{\hbar}{2}$, the ground state energy of the particle can be estimated to be

(a) $\frac{3}{2}\left(\frac{\hbar^2 V_0^2}{4m}\right)^{1/3}$ (b) $\frac{2}{3}\left(\frac{\hbar^2 V_0^2}{4m}\right)^{1/3}$ (c) $\left(\frac{\hbar^2 V_0^2}{4m}\right)^{1/3}$ (d) $3\left(\frac{\hbar^2 V_0^2}{4m}\right)^{1/3}$

15. A circular disc has mass M, radius R, and boundary equation $x^2 + y^2 = R^2$. Its mass density is $\alpha|x|$. Moment of inertia of disc about an axis through its centre and perpendicular to its plane is

(a) $\frac{MR^2}{2}$ (b) $\frac{MR^2}{3}$ (c) $\frac{3}{4}MR^2$ (d) $\frac{3}{5}MR^2$

16. A hypothetical two dimensional crystal consisting of atoms arranged on a square grid as shown in figure :



The reciprocal basis vectors can be written as

(a) $\frac{\pi}{a}(\hat{i}+\hat{j})$ and $\frac{\pi}{a}(\hat{i}-\hat{j})$ (b) $\frac{\pi}{a}\hat{i}$ and $\frac{\pi}{a}\hat{j}$

(c) $\frac{\pi}{a}(-\hat{i}-\hat{j})$ and $\frac{\pi}{a}(\hat{i}-\hat{j})$ (d) $-\frac{\pi}{a}\hat{i}$ and $-\frac{\pi}{a}\hat{j}$

17. A uniform string of lengths l is fixed at both ends such that tension T is produced in it. The string is excited to vibrate with maximum displacements amplitude a_0. The maximum kinetic energy stored in entire string for its first overtone is

(a) $\frac{2\pi^2 a_0^2 T}{l}$ (b) $\frac{\pi^2 a_0^2 T}{l}$ (c) $\frac{\pi^2 a_0^2 T}{4l}$ (d) $4\pi^2 a_0^2 Tl$

18. The equation of a state of a monoatomic gas is given by $P(V-bn)=nRT$, where b is a constant and other quantities have their usual meanings. The ratio of the isothermal compressibility to the coefficient of volume expansion is

(a) P/T (b) T/P (c) $-P/T$ (d) $-T/P$

19. The equation of state of a gas is given by $PV+\frac{a}{V}=RT$. The free energy (F) and the Gibbs energy (G) are related as

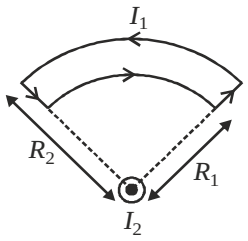
(a) $\left(\frac{\partial G}{\partial P}\right)_T-\left(\frac{\partial F}{\partial P}\right)_T=V$ (b) $\left(\frac{\partial F}{\partial P}\right)_T-\left(\frac{\partial G}{\partial P}\right)_T=V$

(c) $\left(\frac{\partial F}{\partial T}\right)_V-\left(\frac{\partial G}{\partial T}\right)_V=R$ (d) $\left(\frac{\partial G}{\partial T}\right)_V-\left(\frac{\partial F}{\partial T}\right)_V=R$

20. An electric dipole of dipole moment p is placed at centre of ring with its $\vec{p}$ along axis of the ring. Force on the dipole is (Q = charge of ring, R = radius).

(a) 0 (b) $\frac{pQ}{2\pi\varepsilon_0 R^3}$ (c) $\frac{pQ}{4\pi\varepsilon_0 R^3}$ (d) $\frac{pQ}{\pi\varepsilon_0 R^3}$

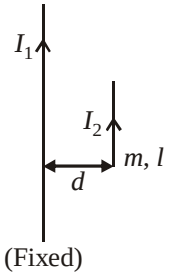
21. In figure shown, net force on the loop is



(a) 0 (b) $\frac{\mu_0 I_1 I_2}{2\pi}\ln\left(1+\frac{R_2}{R_1}\right)$

(c) $\frac{\mu_0 I_1 I_2}{2\pi}\ln\frac{R_2}{R_1}$ (d) $\frac{\mu_0 I_1 I_2}{4\pi}\ln\frac{R_2}{R_1}$

22. A wire of length l and mass m, carrying a current I_2 is placed near a long wire (fixed) as shown in the figure. Due to magnetic attraction the short wire moves towards the long wire speed of the short wire at the instant its distance from the long wire becomes $d/2$ is



(a) $\sqrt{\frac{\mu_0 I_1 I_2 l}{2\pi m}}$ (b) $\sqrt{\frac{\mu_0 I_1 I_2 l \ln 2}{\pi m}}$ (c) $\sqrt{\frac{\mu_0 I_1 I_2 l}{2\pi m}\ln 2}$ (d) $\sqrt{\frac{\mu_0 I_1 I_2 l}{\pi m}}$

23. The reduced expression of $\overline{\overline{AB}+\bar{A}+AB}$ is

(a) $\bar{A}$ (b) $\bar{B}$ (c) $A+B$ (d) 0

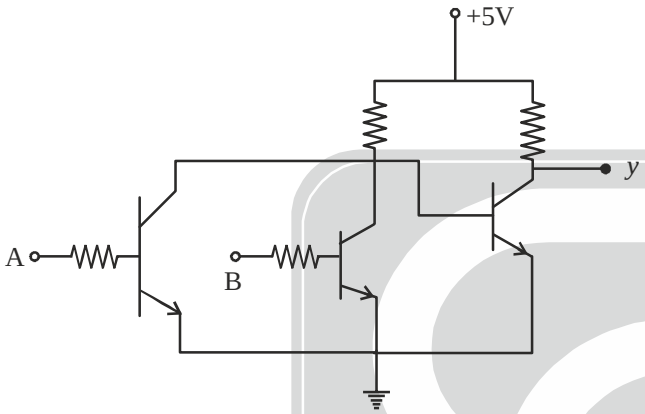
24. Starting with a sample of pure ^{66}Cu, 7/8 of its decays into Zn in 15 minutes. The corresponding half-life is

(a) 5 minutes (b) $7\frac{1}{2}$ minutes (c) 10 minutes (d) 14 minutes

25. For a Clamper circuit to operate properly, its $R_L C$ time constant should be

(a) equal to the period T of the signal
(b) > 10 times of the period T of the signal
(c) > 100 times the period T of the signal
(d) < 10 times the period T of the signal

26.



The circuit will work as

(a) NOR gate (b) NAND gate (c) AND gate (d) OR gate

27. If 0, 1, 2 are three eigenvalues of a square matrix $A=\begin{pmatrix}1 & 0 & 0\\ 0 & 1 & 1\\ 0 & 1 & 1\end{pmatrix}$, then normalized eigenvector corresponding to eigenvalue '0' is

(a) $\left(0,\frac{1}{\sqrt{2}},-\frac{1}{\sqrt{2}}\right)$ (b) $(0,-1,1)$ (c) $\left(-\frac{1}{\sqrt{3}},\frac{1}{\sqrt{3}},\frac{1}{\sqrt{3}}\right)$ (d) $\left(\frac{1}{\sqrt{3}},\frac{1}{\sqrt{3}},-\frac{1}{\sqrt{3}}\right)$

28. The number of nearest neighbours in hexagonal closed-packed structure is

(a) 8 (b) 6 (c) 12 (d) 16

29. Suppose a charge Q is distributed within a sphere of radius R in such a way that the charge density $\rho(r)$ at a distance *r* from the centre of the sphere is

$$\rho(r)=\begin{cases}\frac{3Q}{\pi R^4}(R-r) & for\ 0<r<R\\ 0 & for\ r>R\end{cases}$$

The electric field will be maximum at a distance from the center

(a) R (b) $\frac{R}{3}$ (c) $\frac{2R}{3}$ (d) $2R$

30. The electric field of an electromagnetic wave is given by

$$\vec{E} = \left(3\hat{i} + 4\hat{j}\right) E_0 \, e^{i\left[\left(\frac{\sqrt{3}}{2}x - \frac{1}{2}y\right)k_0 - \omega t\right]} V/m$$

The value of k_0 and ω are 3×10^7 m^{-1} and 9×10^{15} s^{-1} respectively. Then the medium is

(a) dielectric of refractive index 3 (b) free space

(c) conducting (d) dielectric of refractive index 1.5

Section-B : Multiple Select Questions (MSQ)

Q.31 to Q.40 : Carry 2 Marks each.

31. Consider the following function:

$$f(x) = \begin{cases} +1 & \text{for } -\pi < x < 0 \\ -1 & \text{for } 0 < x < \pi \end{cases}; \qquad f(x + 2\pi) = f(x)$$

Which of the following statements is/are **CORRECT** for the Fourier series expansion of the function? (Symbols have their usual meanings)

(a) The value of the function $f(x)$ at $x = \pi$, will be -1.

(b) The value of the Fourier coefficient a_n will be zero.

(c) The value of the Fourier coefficient b_n will be $-\frac{4}{n\pi}$.

(d) The value of the infinite series $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \ldots\ldots$ will be $\frac{\pi}{4}$.

32. A beam of x-rays with wavelength 0.24 nm is directed toward a sample. The x-rays scatter from the electrons within the sample, imparting momentum to the electrons, which are initially at rest in the lab frame. After scattering, the x-rays are detected at various angles relative to the direction of the incoming beam using a detector that can resolve their wavelengths. Which of the following statements is/are **CORRECT**?

(a) The longest wavelength measured by the detector will be 0.2449 nm.

(b) The maximum kinetic energy of the recoiling electron will be 104 eV.

(c) The recoil electron will be non-relativistic in nature.

(d) If the detector measures a wavelength for the scattered x-rays of 0.2412 nm, then the x-ray scattering angle will be 60^0.

33. A partile moves along straight line $y = d$ with constant velocity $v\hat{i}$. At $t = 0$ particle was at (0, d). If (r, θ) be instantaneous polar coordinates and $v_r, v_\theta, a_r, a_\theta$ be instantaneous radial, transverse velocity and accelerations respectively then

(a) $v_r = \frac{v}{\sqrt{1 + \left(\frac{d}{vt}\right)^2}}$ (b) $v_\theta = \frac{-v}{\sqrt{1 + \left(\frac{vt}{d}\right)^2}}$ (c) $a_r = 0$ (d) $a_\theta = 0$

34. A thin circular disc of mass M and radius R is made to spin about its axis with angular velocity ω and placed on a rough horizontal surface due to which the disc begins to roll without sliping after some time. Which of the following statements is/are correct

(a) Angular velocity for rolling motion is $\omega / 3$

(b) Total work done by the friction till the time rolling begins is $-\frac{M\omega^2 R^2}{6}$

(c) Work done by frictional torque till the time rolling begins is $-\frac{2}{9}M\omega^2 R^2$

(d) Friction force acts in forward direction before rolling and becomes zero when rolling starts.

35. In a SHM at any instant displacement of the particle is 4.3 cm and its velocity is –3.2 m/sec. The particle mass is 4 kg and its total energy is 79.5 J. If amplitude of the motion is 0.05 m, then

(a) The angular frequency is 126 rad/sec.

(b) Displacement of the particle is $x = 0.05 \cos(126t + 0.2)$

(c) Distance travel by the particle in time $t = 0.4$ s from the start is approximately 1.6 m.

(d) Maximum kinetic energy is 79.5 J.

36. Which of the following statement(s) is/are CORRECT ?

(a) If the entropy of the universe increases in a process, the process must be spontaneous.

(b) If the entropy of the universe increases in a process, the process must be non-spontaneous.

(c) If we make a ball to fall freely from some height towards the ground in air its entropy decrease.

(d) If we rise a ball to some height from the ground in air its entropy increases.

37. A system has two energy levels with energies $-2E$ and $+2E$. The lower level is 3-fold degenerate and the upper level is non-degenerate. If there are N classcial non-interacting particles in the system, which is in thermodynamic equilibrium at a temperature T, which of the following is/are CORRECT ?

(a) The fraction of particles in the upper level is $\frac{3}{3+e^{-4E/k_BT}}$.

(b) The probability of finding a particle in a lower level is $\frac{3}{3+e^{-4E/k_BT}}$.

(c) The average energy of the system is $\frac{-6Ee^{4E/k_BT}+2E}{3e^{4E/k_BT}+1}$.

(d) The ratio of the average number of particles in the lower and the upper level is $3 : e^{-4E/k_BT}$.

38. An electric dipole is placed at centre of a cube of sides 'a', with its dipole moment (p) parallel to one of the edges of cube. Which of the following is/are *correct* ?

(a) Magnitude of potential at all corner of cube is same

(b) Magnitude of potential at all face centre of cube is same

(c) Magnitude of field at all corners of cube is same

(d) Magnitude of electric potential at corner is $\frac{p}{3\sqrt{3}\pi \in_0 a^2}$

39. Sodium has bcc structure of cell having side equal to 0.428 nm. Which of the following statements are correct

(a) The hall coefficient of sodium according to free electron theory is given by $R_H = 0.245\times10^{-9}\ m^3C^{-1}$

(b) The hall coefficient of sodium according to free electron theory is given by $R_H = 0.49\times10^{-9}\ m^3C^{-1}$

(c) The free electron density of sodium is $1.77\times10^{28}/m^3$.

(d) The free electron density of sodium is $2.55\times10^{28}/m^3$.

40. A long wire lying along z-axis carries a current I in +z direction. Which of the following statements is/are correct?

(a) $\oint_C \vec{B}\cdot\vec{dl} = \mu_0 I \quad C:(x-1)^2+(y-1)^2 = 4$ clockwise

(b) $\vec{\nabla}\times\vec{B} = 0$ at $x=1, y=1$

(c) Magnetic flux is non-zero through $x=0, y>0, z>0$ plane

(d) $\oint_C \vec{B}\cdot\vec{dl} = 0 \quad C:(x-1)^2+(y-1)^2 = \frac{1}{4}$

Section-C : Numerical Answer Type (NAT)

Q.41 to Q.50 : Carry 1 Mark each.

41. Consider the following differential equation:

$$x\frac{dy}{dx} + y = 1$$

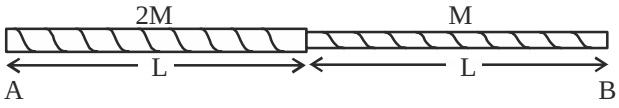
under the condition $y(x=1)=0$, the solution of the differential equation will blow up as x tends to _____(an integer).

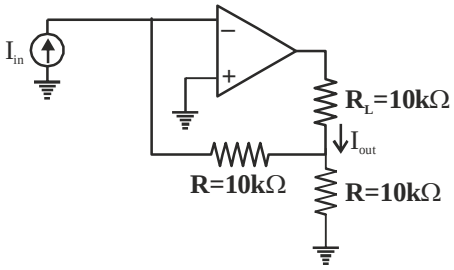
42. A particle is confined inside a one-dimensional box of length L. The particle is in an eigenstate in the wavefunction of the particle has 4 nodes (not including the boundary). The energy of the particle is equal to _____ (in units of $\frac{\pi^2\hbar^2}{2mL^2}$) [An Integer]

43. The compton wavelength of a proton is _____ *fm*. (upto two decimal places)

44. A large container is filled with liquid upto height H and place on ground. Two holes are made in the container at height $\frac{H}{2}$ and $\frac{3H}{4}$. Water coming out of the two holes intersect at a height NH above ground. The value of N is _____

45. Two thin rods are joined together as shown, in figure. Assume rods are uniform and placed on smooth horizontal surface. When an impulse is given to the system at A perpendicular to length produces angular velocity ω_1 whereas the same impulse at B produces angular velocity ω_2. The value of ω_2/ω_1 is _____



46. 

The feedback fraction of the given circuit is _____(upto one decimal place)

47. In a young's double slit experiment using light, the apparatus has two narrow slits of unequal width. When only slit-1 is open, the maximum observed intensity on the screen is $4I_0$, when only slit-2 is open, the maximum observed intensity is I_0. When both the slits are open, an interference pattern appears on the screen. The ratio of the intensity of the principal maxima to the point where path difference is $\lambda/4$ is _____.

48. The number of ways in which four protons can be filled in three energy levels is _____.

49. For the roots of unity $z = e^{2\pi i/m}$, $m > 1$, the value of $1 + z + z^2 + \cdots z^{m-1}$ is equal to _____.

50. The value of potential energy in n = 2 hydrogen orbit _____eV.

Q.51 to Q.60 : Carry 2 Marks each.

51. The value of the integral $\oint_C \left[\left(x^2 + y^2\right)dx + \left(y + 2x\right)dy\right]$, where C is the boundary of the region in the first quadrant that is bounded by the curves $y^2 = x$ and $x^2 = y$, will be _____ (upto two dcimal places)

52. The flux of the vector field $\vec{F} = z^2\,\hat{i} + xy\,\hat{j} - y^2\,\hat{k}$ through the curved surface of the cyllinder $x^2 + y^2 = 36$, $0 \le z \le 4$ included in the first octant, will be _____ (an integer)

53. Suppose a linear harmonic oscillator of frequency ω and mass *m* is in the state (at t = 0)

$$|\psi\rangle = |\varphi_1\rangle + \exp\left(i\frac{\pi}{2}\right)|\varphi_2\rangle$$

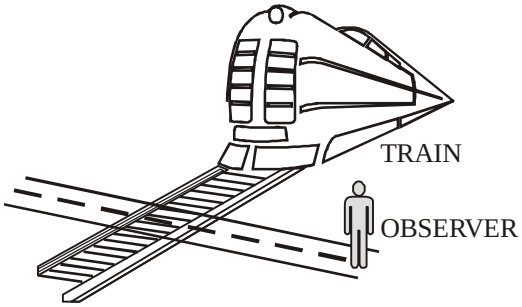
where $|\varphi_1\rangle$ and $|\varphi_2\rangle$ are the ground state and first excited state, respectively. The average position of the particle at t = 0, will be ..... (in the units of $\sqrt{\frac{\hbar}{m\omega}}$) [An integer]

54. A thin uniform rod is placed on a rough horizontal surface. When an impulse is given at one end perpendicular to its length, the rod being to rotate and translate. If rotation and translation stop after time T_1 and T_2 respectively then value of T_1/T_2 is _____

55. As seen in lab frame, two particles each of mass m moving in circle of radius R under their mutual gravitational attraction. Resultant of centrifugal and coriolis force on one particle in the frame of other particle is $\frac{KGm^2}{R^2}$. The value of K is _____

56. A circular disc of mass M and radius R rolls on a horizontal circular path of radius R with angular velocity ω. The kinetic energy of the disc is $KMR^2\omega^2$, then value of K is _____

57. Suppose a train (*Garib Rath*) approching a crossing at speed 0.05 miles/sec sounds a whistle of frequency 400 cycles/sec, when at a distance 4 miles from the crossing. Speed of sound in air is 0.200 miles/sec. What frequency is heard by the observer standing at 3 miles away on the straight road from the crossing at right angle.



58. The values of heat transfer and work transfer for the process of a thermodynamic cycle are given below :

Process	Heat transfer (kJ)	Work transfer (kJ)
1	400	300
2	0	250
3	−100	−100
4	0	−250

The thermal efficiency of the cycle is _____.

59. If $\int_C \vec{F} \cdot d\vec{r} = \iint_S \left(\vec{\nabla} \times \vec{F}\right) \cdot \hat{n}\, dS$, where '*S*' is a diaphragm enclosing a circuit '*C*', $\vec{F} = \vec{a} \times \vec{r}$ ($\vec{a}$ is a constant vector and $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$) and $\int_C \vec{r} \times d\vec{r} = A\iint_S dS$, then value of '*A*' is _____.

60. When relativistic charge particle is thrown into perpendicular magnetic field, it moves in circular path. If radius of circular orbits be R_1 and R_2 for kinetic energies m_0c^2 and $2m_0c^2$ respectively then value of $\frac{R_2}{R_1}$ is _____.

***** END OF THE QUESTION PAPER *****

Space for rough work

IIT-JAM PHYSICA-PH

Date : 28-01-2018

TEST SERIES - 6

FULL LENGTH TEST-3

ANSWER KEY

Section-A : Multiple Choice Questions (MCQ)

1. (d)	**2.** (c)	**3.** (a)	**4.** (b)	**5.** (b)
6. (d)	**7.** (b)	**8.** (c)	**9.** (b)	**10.** (b)
11. (b)	**12.** (b)	**13.** (b)	**14.** (a)	**15.** (d)
16. (a)	**17.** (b)	**18.** (b)	**19.** (d)	**20.** (c)
21. (a)	**22.** (b)	**23.** (d)	**24.** (a)	**25.** (c)
26. (d)	**27.** (a)	**28.** (c)	**29.** (c)	**30.** (b)

Section-B : Multiple Select Questions (MSQ)

31. (b),(d)	**32.** (a),(b),(c),(d)	**33.** (a),(b),(c),(d)	**34.** (a),(b),(c),(d)
35. (a),(c),(d)	**36.** (a)	**37.** (b),(c),(d)	**38.** (a),(c),(d)
39. (a),(d)	**40.** (b),(c),(d)		

Section-C : Numerical Answer Type (NAT)

41. (0)	**42.** (25 to 25)	**43.** (1.30 to 1.35)	**44.** (0.23 to 0.27)
45. (1.2 to 1.6)	**46.** (0.4 to 0.7)	**47.** (1.8 to 1.8)	**48.** (6 to 6)
49. (0)	**50.** (–6.5 to –6.9)	**51.** (0.35 to 0.39)	**52.** (415 to 417)
53. (0)	**54.** (2 to 2)	**55.** (0.23 to 0.28)	**56.** (0.85 to 0.90)
57. (500 to 500)	**58.** (0.5)	**59.** (2 to 2)	**60.** (1.63 to 1.66)