Physics 1

1. N molecules each of mass m and v velocity collides with a wall of a container and then absorbed, the pressure applied on the wall is :

(1) mNV^2 (2) $\frac{mNV^2}{3}$ (3) $2\ mNV^2$ (4) $\frac{mNV^2}{2}$

2. The law of far a day is obtained by conservation of :

(1) Charge (2) Energy (3) Energy and magnetic field (4) Magnetic field

3. There is a q charge placed in the centre of a cube, then the emergent flux is :

(1) $\frac{q}{6\in_0}$ (2) $\frac{q}{8\in_0}$ (3) $\frac{q}{2\in_0}$ (4) $\frac{q}{\in_0}$

4. Two thin lenses are put close to each other, focal length of the combination is :

(1) less than the small focal length
(2) more than the bigger focal length
(3) equal to the arithmetical average of the focal length
(4) equal to the geometrical average of the focal length

5. A car is moving on a horizontal circular path with 10 m/s constant speed. A rigid body is suspended from ceiling of car with a 1 m. long light rod, the angle between rod and path is :

(1) 60^0 (2) 45^0 (3) 30^0 (4) zero

6. Two sources of E_1 and E_2 emf r_1 and r_2 internal, resistances, are connected in the parallel combination, the emf of the combination is :

(1) $\frac{E_1E_2}{E_1+E_2}$ (2) $\frac{E_2r_1 + E_1r_2}{r_1 + r_2}$ (3) $\frac{E_1r_1 + E_2r_2}{r_1 + r_2}$ (4) $\frac{E_1 + E_2}{2}$

7. In a AC circuit $R = 0\ \Omega$, $X_L = 8\Omega$ and $X_C = 6\Omega$ phase difference between voltage and current is :

(1) 11^0 (2) 45^0 (3) 37^0 (4) 12^0

8. Relative permeability of a medium is μ_r and relative permittivity is $\in_r$ then the velocity of an electro magnetic wave is :

(1) $\frac{c}{\ }$ (2) $\frac{\sqrt{\in_r\mu_r}}{\in_0\mu_0}$ (3) $\frac{\sqrt{\mu_0 t_0}}{\mu_r\in_r}$ (4) $\frac{1}{\mu_r\in_r}$

$\sqrt{\mu_r \in_r}$

9. Ration of radius of two soap bubbles is 2 : 1 then the ratio of their excess pressure is :

(1) 2 : 1 (2) 4 : 1 (3) 1 : 4 (4) 1: 2

10. Ratio of sound velocities is H_2 and O_2 will be :

(1) 32 : 1 (2) 1 : 4 (3) 16 : 1 (4) 4 : 1

11. In which of the waves the energy is not propagated :

(1) em waves
(2) longitudinal waves
(3) stationary waves
(4) transverse waves

12. A body of 2 kg. mass is moving under a force, relation between time and displacement is $x = \frac{t^3}{3}$ where x in meter and t in time work done in first two seconds is :

(1) 1.6 J (2) 16 J (3) 160 J (4) 1600 J

13. A uniform chain of L length and M mass, two third part of chain is on a frictionless table and one third part is vertically suspended, work done to pull the whole chain on table, is :

(1) $\frac{MgL}{18}$ (2) $\frac{MgL}{9}$ (3) $\frac{MgL}{6}$ (4) $\frac{MgL}{3}$

14. If the intensity and frequency of incident light is doubled then :

(1) photo electric current will become is times
(2) kinetic energy of the emitted electron will be increased and current will be 2 times
(3) kinetic energy of electrons will be 4 times
(4) the kinetic energy of electrons will be 2 times

15. A car travels half distance with 40 kmph and rest half distance with 60 kmph then the average speed of car is :

(1) 60 kmph (2) 52 kmph (3) 48 kmph (4) 40 kmph

16. Two particle are moving with same velocities in the circular paths of r_1 and r_2 radius then the ratio of their centripetal forces is :

(1) $\frac{r_2}{r_1}$ (2) $\sqrt{\frac{r_2}{r_1}}$ (3) $\left[\frac{r_1}{r_2}\right]^2$ (4) $\left[\frac{r_2}{r_1}\right]^2$

17. No. of electrons in the $_{92}U^{235}$ nucleus is :

(1) 143 (2) 235 (3) 92 (4) zero

18. The wavelength of photon and electron is λ_{ph} and λ_e and energy (E) of the two is same then :
(1) the difference can be obtain if E is given
(2) $\lambda e > \lambda ph$
(3) $\lambda ph \,.\, \lambda e$
(4) $\lambda ph = \lambda e$

19. A lift is moving with acceleration a in upward direction then the force applied by mass m on the floor of lift will be :
(1) ma (2) m(g-a) (3) m(g+a) (4) mg

20. Two cars of m_1 and m_2 mass are moving in the circular paths of r_1 and r_2 radius, their speed is such that they travels one cycle in the same time, the ratio of their angular velocities is :
(1) $m_1r_1 : m_2r_2$ (2) 1 : 1 (3) $r_1 : r_2$ (4) $m_1 : m_2$

21. A ring of mass M, radius r is moving with angular velocity w, if another two bodies each of mass m is placed on its diameter, the resultant angular velocity will be :
(1) $\frac{w(M + 2m)}{M}$ (2) $\frac{w(M - 2m)}{(M + 2m)}$ (3) $\frac{wM}{(m+m)}$ (4) $\frac{wM}{(M+2m)}$

22. The wavelength of 1 ke V photon 1.25 x 10^{-9} m the frequency of Me V photon will be:
(1) 1.24 x 10^{23} (2) 2.4 x 10^{23} (3) 2.4 x 10^{23} (4) 1.24 x 10^{15}

23. Size of nucleusis of the order of :
(1) 10^{-13} cm (2) $10^{-10\text{ cm}}$. (3) $10^{-8\text{ cm}}$. (4) 10^{-15} cm.

24. If MI, angular acceleration and torque of body is I, $\propto$ and τ, it is revolving with ω angular velocity then :
(1) $\tau = \frac{\alpha}{I}$ (2) $M = \frac{1}{\alpha}$ (3) $\tau = I\alpha$ (4) $\tau = I\omega$

25. In a uniform circular motion :
(1) both acceleration and speed changes
(2) both acceleration and speed are constant
(3) both acceleration and velocity are constant
(4) both acceleration and velocity changes

26. Ratio of average kinetic evergies of H_2 and O_2 at a given temp. is :
(1) 1 : 1 (2) 1 : 4 (3) 1 : 8 (4) 1 : 16

27. To make the working of a machine, free of magnetism, the cover of this machine must be of :
(1) non magnetic substance
(2) diamagnetic substance
(3) paramagnetic substance
(4) ferro magnetic substance

28. λ_α, λ_β and λ_r are the wavelengths of k $_\alpha$, k_β and k_r lines of X-ray spectrum then :

(1) $\lambda_\beta > \lambda_a > \lambda_r$ (2) $\lambda_\alpha < \lambda_B < \lambda_r$ (3) $\lambda_\alpha > \lambda_\beta > \lambda_r$ (4) $\lambda_\alpha = \lambda_\beta = \lambda_r$

29. Angular momentum of electron of H atom is proportional to :

(1) $\frac{1}{r}$ (2) $\frac{1}{\sqrt{r}}$ (3) $\sqrt{r}$ (4) r^2

30. MI, rotational kinetic energy and angular momentum of a body is I, E and L then :

(1) $E=\frac{L^2}{2I}$ (2) $E^2=\frac{2I}{L}$ (3) $E = 2IL$ (4) $L=\frac{E^2}{2I}$

31. In a diode value, the state of saturation can be obtained easily by :
(1) high plate voltage and high filament
(2) low filament current and high plate voltage
(3) low plate voltage and high plate tem
(4) high filament current and high plate voltage

32. A magnet is dropped in a long coppertube vertically, the acceleration of magnet :
(1) equal to g (2) less than g (3) zero (4) greater than g

33. Joule-second is unit of :
(1) rotational power
(2) angular momentum
(3) rotational energy
(4) torgue

34. A 3 coulomb charge enerts 3000 N force in a uniform electrical field, the distance between two points is 1 cm. potential difference will be :
(1) 9000 V (2) 1000 V (3) 90 V (4) 10 V

35. 1000 drops, each v volt, are combined to form a big drop, then the potential of the drop will be how many times :
(1) 1 (2) 10 (3) 100 (4) 1000

36. A plane is revoloving around the earth with 100 km./hr. speed at a earth, the changes in the velocity as it travels half circle is :

(1) $100\sqrt{2}$ kmph (2) 150 kmph (3) 200 kmph (4) zero

37. 3×10^7 kg. water is initially constant and it is displaced 3 m. by applying 5×10^4 N force. Velocity of water will be (if resistance of water is zero) :
(1) 50 m/sec. (2) 0 1 m/sec. (3) 60 m/sec. (4) 1.5 m/sec.

38. In a wheat stone circuit P = Q = 10Ω and R = S = 15 Ω and G = 20 Ω. If a cell of 1.5 volt emf is used, the current drawn from the cell is :
(1) 0.021 amp (2) 0.025 amp (3) 0.060 amp (4) 0.125 amp

39. Two waves of same frequency and different amplitude, if the phase difference is $\pi/2$ then the Lissajou's figure will be :
(1) 8 shape (2) an ellipse (3) a circle (4) a straight line

40. A monoatomic gas (r = 5/3) and a diatomic gas (r= 7/5) are mixed in equal ratio then the r of mixture will be :
(1) 3.07 (2) 1.53 (3) 1.5 (4) 1.4

41. Velocity of e.m. waves in paraffine is 2.07×10^8 m/sec. then the dielectric constant is:
(1) 2.10 (2) 1.87 (3) 1.45 (4) 1.22

42. After emission of a β-particle, the nucleus :
(1) A – 4, Z – 2 (2) A,Z-1 (3) A, Z-2 (4) A + 2, Z

43. Charge on a proton is 9.6×10^7 c/kg. A proton is moving in a 1T magnetic field in 0.5 m radius circular path, the energy of proton in Mev.
(1) 16.34 (2) 12.02 (3) 8.25 (4) 4.84

44. If $\frac{d^2\omega}{dx^2} + \alpha x = 0$ then the angular frequency will be :

(1) $\sqrt{\alpha}$ (2) α^2 (3) α (4) zero

45. Noble prize presented to Einstein for :
(1) therories of LASER
(2) photo electric effect
(3) theory of relativity
(4) theory of specific heat in solids

46. Before saturation current the ratio of plate currents at 400 v and 200 v plate voltage is:
(1) $\frac{1}{2}$ (2) 2 (3) $2\sqrt{2}$ (4) $\frac{\sqrt{2}}{4}$

47. If $I = I_0 \sin(\omega t - \pi/2)$ and $E = E_0 \sin \omega t$ then the power loss is :
(1) $\frac{EI}{\sqrt{2}}$ (2) $\frac{E_0 I_0}{2}$ (3) $\frac{E_0 I_0}{\sqrt{2}}$ (4) zero

48. If the temp. of an ideal gas filled in a container is increased 1^0C, the increase in pressure is 0.4%, the initial temp. of the gas is :
(1) 120^0C (2) 200^0K (3) 250^0K (4) 250^0C

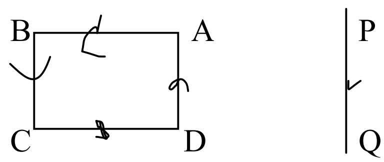
49. Plate resistances of two triode values is 2KΩ and 4KΩ, amplification factor of each of the value is 40^0. The ratio of voltage amplifications, when used with 4kΩ load resistance, will be :
(1) 10 (2) 4/4 (3) 4/3 (4) 16/3

50. Relation between displacement x and time t is $x = 2 - 5t + 6t^2$, the initial velocity will be:
(1)-3 m/sec. (2) 12 m/sec. (3) 2 m/sec. (4) – 5 m/sec.

51. Focal length of a convex lens is 16 cm. it is dipped in water. The refractive indices of the substance of lens and water are 1.5 and 1.33 resp., now the focal length will be :
(1) 64 cm. (2) 18 cm. (3) 24.24 cm. (4) 16 cm.

52. In a half wave rectifier circuit, the input signal frequency is 50 Hz, the the output frequency will be :
(1) 25 Hz (2) 50 Hz (3) 200 Hz (4) 100 Hz

53. In the following circuit :



(1) the loop will be displaced along the length of wire
(2) PQ unchanged
(3) the loop will repell the wire
(4) wire will attract the loop

54. In a triode the ratio of small change in plate voltage and small changes in grid voltage is, if plate current is constant :
(1) DC plate resistance
(2) mutual conductance
(3) AC plate resistance
(4) amplification factor

55. Two particles accelerated with same voltage eneters in a uniform magnetic field perpendicularly, the radii of the circular paths is R_1 and R_2, the charge on particles is same the ratio of $\frac{m_1}{m_2}$ is :

(1) $\left(\frac{R_2}{R_1}\right)^2$ (2) $\frac{R_2}{R_1}$ (3) $\frac{R_1}{R_2}$ (4) $\left(\frac{R_1}{R_2}\right)^2$

56. Light Velocity in diamond is ($\mu = 2.0$)
(1) 60×10^{10} cm/sec.
(2) 2×10^{10} cm/sec.
(3) 3×10^{10} cm/sec.
(4) 1.5×10^{10} cm/sec.

57. If Arsenic is dopped to silicon then its conductivity :
(1) becomes zero
(2) unchanged
(3) increases
(4) decreases

58. Two condensers of c and 2c capacity are connected in parallel and these are charged upto v volt. If the battery is removed and dielectric medium of k constant is put between the plates, then the potential at each condenser is :

(1) $\frac{v}{k+2}$ (2) $2+\frac{k}{3v}$ (3) $\frac{2v}{k+2}$ (4) $\frac{3v}{k+2}$

59. Equation of wave is $y = 15 \times 10^{-2} \sin(300t - 100x)$ where x in meter and t in sec. the wave velocity is :

(1) 1.5 m/sec. (2) 3 m/sec. (3) 0.5 m/sec. (4) 1 m/sec.

60. Escape velocity at the surface of earth is 11 km/sec., if radius of earth is doubled then the escape velocity will be :

(1) 15.5 km/sec. (2) 5.5 km/sec.(3) 11 km/sec. (4) 22 km/sec.

61. Kinetic energies of two bodies of 1 kg. and 4 kg. are same, the ratio of their momentum is :

(1) 1 : 16 (2) 1 : 2 (3) $\sqrt{2:1}$ (4) 4 : 1

62. A body takes 5 minute to cool from 30^0C to 50^0 C. How much time it will take to cool from 60^0 C to 30^0 C, if room temp. is 20^0 C :

(1) 40 minute (2) 10 minute (3) 30 minute (4) 20 minute

63. AC voltage is v = 200 sin 300t and if R = 10Ω and L = 800 mH, peak value of current is :

(1) 1.83 (2) 1.5 (3) 2.0 (4) .83

64. Two charges + q and – q are placed at r distance from each other. If one of the charge is stationary and other is rotated around, work done is one circle is :

(1) $\frac{kq^2}{r^2}$ (2) $\frac{kq}{r}$ (3) $\frac{kq^2}{r}$ (4) zero

65. Peak value of AC current is $4\sqrt{2}$, RMS current is :

(1) $2\sqrt{2}$ (2) 8 (3) $4\sqrt{2}$ (4) 4

66. A monoatomic gas is compressed to its $1/8^{th}$ volume adiabatically (r = 5/3), the pressure will be :

(1) 32 times (2) $\frac{40}{3}$ times (3) 8 times (4) $\frac{24}{5}$ times

67. A condenser is charged and then battery is removed, a dielectric plate is put between the plates of condenser, then correct statement is :

(1) Q constant V and U decreases

(2) Q constant V increases U decreases

(3) Q increases V decreases U increases

(4) None

68. The MI of a disc wrt its diameter is I, MI wrt. And axis passing through its circumference and parallel to diameter is :

(1) 41 (2) 61 (3) 31 (4) 51

69. Length of two wires is 0.5 m and distance between the wires is 1 m. If 1 amp. current is passed in the wires, force per unit length between the wires is :
(1) 4×10^{-7} (2) 2×10^{-7} (3) 10^{-7} (4) None

70. Relation between internal energy U and absolute temp. T of an ideal gas as kinetic theory of gases, is :
(1) U does not depends upon T
(2) $U \propto T^2$
(3) $U \propto T$
(4) $U \propto \sqrt{T}$

71. Light wavelength in a glass is 6000Å and refractive index is 1.5, the wavelength of light is :
(1) 12000 Å (2) 4000 Å (3) 9000 Å (4) 6000 Å

72. Two sources of sound A & B placed near to each other produces 4 beats per second. If A is loaded with wax then 2 beats/sec. are produced. If the frequency of A is 256 Hz, The frequency of B will be :
(1) 262 (2) 260 (3) 252 (4) 250

73.Work done to rotate a dipole by a 90^0 angle, is :
(1) – PE (2) – 2 PE (3) 2PE (4) PE

74. Zener diode may be used as a :
(1) rectifier (2) oscillator (3) amplifier (4) voltage regulator

75. Wavelength of first line of Balamer series is 6561 Å then the wavelength of second line of Balmer series will be :
(1) 3500 Å (2) 4860 Å (3) 6561 Å (4) 2430 Å