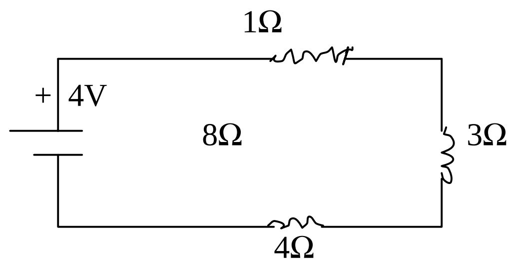


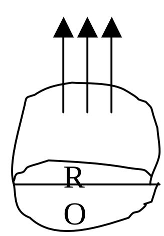
(1) 2 amp. (2) 1 amp. (3) 0.5 amp. (4) 1.25 amp.

8. Which is correct for inside charged sphere :
(1) $E \neq 0, V = 0$ (2) $E=0, V= 0$ (3) $E\neq0, V\neq0$ (4) $E=0, V = 0$

9. The magnetic force experienced charge q in magnetic field moving with velocity V, will maximum when the angle between V and B is :
(1) 0^0 (2) 45^0 (3) 90^0 (4) 180^0

10. A parallel plate condenser is charged with a battery. After changing of the condenser battery is removed and two plates are separated from each other with the help of insulating handles, than :
(1) capacitance decreases
(2) capacitance increases
(3) charge on plates increases
(4) voltage between plates increase

11. The electrical flux from a semi spherical will be :



(1) $\pi R^2 E$ (2) $\frac{4}{3}\pi R^2 E$ (3) $2\pi R^2 E$ (4) $2\pi RE$

12. In closed organ pipe the produced harmonics are :
(1) no harmonics is produced
(2) even and odd both
(3) odd only
(4) even only

13. In this wave equation $Y = 5 \sin 2\pi\pi(4t - 0.02x)$ the wave velocity of wave is :
(1) 50 m/sec. (2) 150 m/sec. (3) 200 m/sec. (4) 100 m/sec.

14. Light velocity in vacuum depends upon :
(1) wavelength (2) frequency (3) intensity (4) none of these

15. In a coil the current changes from 2A to 4A, 0.05 sec. and the induced enf is 8 volt, the coefficient of self induction will be :
(1) 8H (2) 0.02 H (3) 0.2 H (4) 0.8 H

16. The resistance of a galvanometer is 100 Ω and maximum current which can pass through it 0.001 A. The value of shunt to change this galvanometer into voltmeter of 12 volt range will be :
(1) 12,100 Ω (2) 11,900 Ω (3) 1190 Ω (4) 11,990 Ω

17. The AC voltage is given by the equation $E = E_0 \sin \omega t$, if an inductance is connected in the circuit the RMS value of voltage in the circuit will be:

(1) $E_{rms} = \frac{E_0}{2}$

(2) $E_{rms} = \frac{E_0}{\sqrt{2}}$

(3) $Erms = E_0$

(4) $Erms = \sqrt{2}\, E_0$

18. In wattles current phase difference between current and voltage is :
(1) $\pi/4$ (2) $\pi/2$ (3) π (4) zero

19. The ionization potential of hydrogen is 13.6 eV. The total energy of an electron in its third orbit will be :
(1) 3.4 eV (2) – 3.4 eV (3) 1.5 eV (4) – 1.5 eV

20. In radioactive dis-integration the element shift by one place further after the emission of the particle :
(1) α-particle (2) β-particle (3) γ-particle (4) α,β and γ all

21. A metal surface emitted electrons of 3 eV, when a light of 4 eV are made to incident on the same metal surface the energy of the emitted photons will be :
(1) 3 eV (2) 4 eV (3) 5 eV (4) 2 eV

22. If for an electron $m_e = 10^{-31}$ kg., velocity is 10^5 m/s., h = 10^{-34}, the uncertainty in the position of electron will be of the order of :
(1) 10^{-4} m (2) 10^{-8} m (3) 10^{-6} m (4) 10^{-8} m

23. Forbidden energy gap in Ge is :
(1) 0.75 eV (2) 2.5 eV (3) 1.1 eV (4) 5 eV

24. A rod of length L and mass M is suspended from its one end and execute oscillations the time period of vibrations will be :

(1) $T = 2\pi \sqrt{\frac{2L}{g}}$

(2) $T = 2\pi \frac{\sqrt{L}}{g}$

(3) $T = 2\pi \frac{\sqrt{1L}}{2g}$

(4) $T = 2\pi \frac{\sqrt{2L}}{3g}$

25. Two masses m_1 and m_2 are attached to the ends of a string by a weight loss rod of length r_0. The MI of this system about the axis passing through the center of mass and perpendicular to its length will be :

$$\left(\mu 0 = \frac{m_1 m_2}{m_1 + m_2} \right)$$

(1) $\mu_0 r_0^2$ (2) $\mu_0 r$ (3) $\mu_0 r^2$ (4) $\mu_1 r_0^2$

26. The energy of monatomic gas is :

(1) only rotational (2) only vibrational (3) only translatory (4) all the above

27. The work done in increasing the size of a bubble by 10^{-2} m^2 (T = 25 dyne 1 cm.) :

(1) 0.4×10^{-4} erg (2) 50×10^{2} erg

(3) 25×10^{2} erg (4) 25×10^{-2} erg

28. **A geostationary satellite is at a distance of 8 Re revolving around the earth and another satellite is revolving round the earth at 3.5 Re distance, its revolution period** will be:

(1) 8.5 hrs. 92) 16.5 hrs. (3) 18 hrs. (4) 12 hrs.

29. The work done per unit extension in length of a wire will be (L = length, A = area of cross section) :

(1) $\frac{YL^2}{2A}$ (2) $\frac{YA}{2L^2}$ (3) $\frac{YA}{2L}$ (4) $\frac{YL}{2A}$

30. The total energy of a body at distance r from the earth will be :

(1) $-\frac{Gm_e m}{r}$ (2) $-\frac{Gm_e m}{2r}$ (3) $\frac{Gm_e m}{2r}$ (4) $\frac{Gm_e m}{r}$

31. The kinetic energy of a particle executing SHM is changed by frequency f, the frequency of its motion will be :

(1) f/2 (2) f (3) 2f (4) 4f

32. A body of mass m is projected at an angle 45^0 with velocity v from the horizontal the angular momentum acceleration at the heighest point of he motion will be :

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

33. The mass of bob of simple pendulum is m. This bob is life by ehight h and than set free; the work done in displacement of the bob from one end to another will be :

(1) 2 mgh (2) $\frac{1\ mgh}{2}$ (3) mgh (4) zero

34. A boy is revolving on a dice with spreading hands. Suddenly the boy brings his near his body, the change in the system will be :

(1) angular velocity increases
(2) angular velocity decreases
(3) angular velocity unchanged
(4) angular momentum decreases

35. A body moving with 50 m/sec. Velocity collides elastically with another body at rest. After the collision the velocity of first body changes to 30 m/sec., the velocity of the second body will be:

(1) 30 m/sec. (2) 60 m/sec. (3) 80 m/sec. (4) 50 m/sec.

36. The radius of a circular aperture is variable. The light of λλwavelength is made to incident on the aperture a screen is placed at distance b from the aperture. When one increases the radius of the aperture, the value of the radius of aperture for which second time dark point will be obtained on the screen will be :

(1) $\sqrt{b\lambda}$ (2) $\sqrt{3b\lambda}$ (3) $\sqrt{4b\lambda}$ (4) $\sqrt{2nb\lambda}$

37. The length of a sonometer wire is ττand tension T and frequency is n. If the length and tension on sonometer wire are doubled the frequency will become :

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

38. Two forks of approximately equal frequencies are used to produce Lissajou figures. If the Lissajous figure changes its shape once in 1 sec. If the frequency of one of the tuning fork is 1000 Hz, the frequency of second fork will be :

(1) 1000 Hz (2) 1002 Hz (3) 2000 Hz (4) 1001 Hz

39. Fundamental frequency of an open pipe is :

(1) 15 Hz (2) 20 Hz (3) 30 Hz 94) 10 Hz

40. If charge Q is placed at the center of a cube, the emergent flux from one of the face of the cube will be:

(1) $\frac{Q}{2\varepsilon_0}$ (2) $\frac{Q}{3\varepsilon_0}$ (3) $\frac{Q}{6\varepsilon_0}$ (4) $\frac{Q}{\varepsilon_0}$

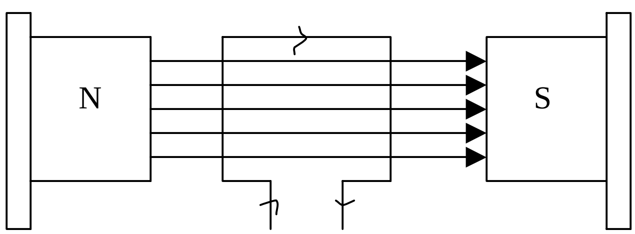
41. Two equal charges each of value q are placed on a straight line, another charge Q is placed at mid of the distance between the system will be most stable is :

(1) $+\frac{q}{2}$ (2) $-\frac{q}{2}$ (3) $+\frac{q}{4}$ (4) $-\frac{q}{4}$

42. An electron passes through an electric field 3200 v/m. of length 0.1 m. with speed 4×10^7 m/sec. The deflection produced in the path of electron will be :

(1) 3.52 mm. (2) 1.35 mm. (3) 0.88 mm. (4) 1.76 mm.

43. A rectangular coil placed in a magnetic field 0.25 T. The area of coil is 96 x 10-4 m2, no. of turns are 50 and current is 2A, the torque experienced by the coil will be:

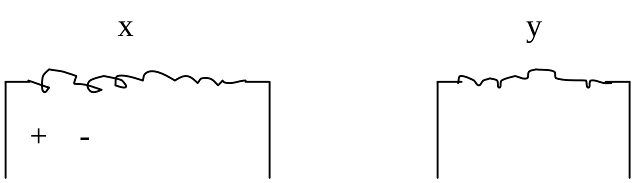


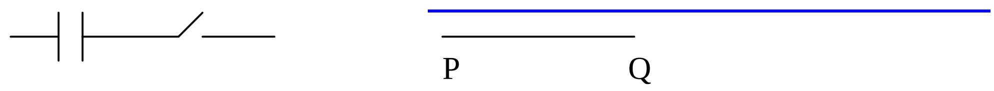
(1) 0.24 N-m. (2) 0.48 N-m. (3) 0.36 N-m. (4) 0.96 N-m.

44. If two charged conductors are short circuited by a wire, the current will now flow:

(1) sizes are equal
(2) capacitances are equal
(3) charges are equal
(4) potential are equal

45. Two coils X and Y are placed near to other according to the figure. If current is passed through X, the direction of induced current in Y will be:





(1) carit be determined (2) no current induce
(3) Q to P (4) P to Q

46. Which quantity doesn't remains constant in simple harmonic motion :
(1) time period (2) velocity (3) frequency (4) amplitude

47. A pot filled with water is revolved in the circular path of radius R, the minimum velocity at which the water will not come out of the pot will be :

(1) gR (2) $\sqrt{2gR}$ (3) $\sqrt{Rg}$ (4) $\sqrt{5gr}$

48. A spring is extended by ιlength, then the force is :
(1) $F = \frac{k}{\iota}$ (2) $F = k\iota$ (3) $F = \frac{k}{\iota^2}$ (4) $F = \frac{k^2}{\iota}$

49. The velocity at which a body will escape from the earth surface is (M_e = mass of earth R_e = radius of earth) :

(1) $V \leq \sqrt{\frac{2GM_e}{R_e}}$ (2) $V \geq \sqrt{\frac{2GM_e}{R_e}}$

(3) $V \leq \sqrt{\frac{GM_e}{R_e}}$ (4) $V \geq \sqrt{\frac{GM_e}{R_e}}$

50. The initial temperature of a gas is 27^0 C. The gas is compressed adiabatically to $1/9^{th}$ of its initial volume, the final temp. of the gas will :
(1) 627^0K (2) 627^0C (3) 727^0C (4) 900^0C

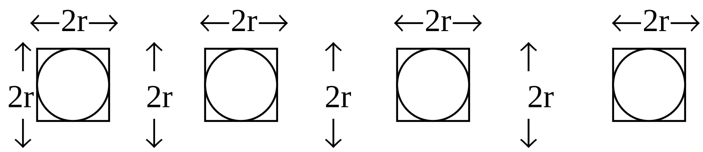
51. The workdone in expanding a gas from 10 m^3 to 20 m^3 at one atmospheric pressure will be :
(1) 10^6 J (2) 10^3 J (3) 10^2 J (4) 10^5 J

52. The mean kinetic energy of the molecule at a given temp. will be max. for :
(1) Hydgrogen (2) Oxygen (3) Helium (4) Equal for all

53. Kind of bonding in H_2 is :
(1) covalent (2) vander waals (3) ionic (4) metallic

54. The density of iron is 7 x 10^3 k/m^3 and breaking stress is 7.9 x 10^8 N/m2, the max, length of the wire which will unable to break the wire from its own weight will be:
(1) 10^5 M (2) 10^3 M (3) 10^4 M (4) 10^2 M

55. Four bodies solid sphere, solid cylinder, disc and ring have same mass and same cross sectional area, the MI about the axis shown by a point in the figure will be max. for the body (the axis is perpendicular to the plane of the bodies) :



(1) only disc (2) sphere and ring
(3) disc and cylinder (4) only ring

56. A cylinder rools down the inclined plane of length 0.15 m. If the mass of cylinder is 0.1 kg. The velocity at the bottom of the inclined plane will be:
(1) 3.5 m/sec. (2) 2 m/sec. (3) 1.4 m/sec. (4) 2.4 m/sec.

57. A stopper is attached in the middle of glass tube. Two bubbles of radius 2 cm. and 4 cm. are formed at the end of the glass tube. If one opens the stopper :
(1) small bubble will reduce and large will increase
(2) both will increase
(3) both will reduce
(4) small will increase and large will reduce

58. A 500 μF capacitor is charged with a battery of 100 volt and it is discharged through 10 Ω resistance the heat produced in resistance will be:
(1) 1.25 J (2) 5 J (3) 10 J (4) 2.5 J

59. Two condensers of 1 μF are connected in series with a battery of 6 volt, the total charge on condensers will be :
(1) 2 μC (2) 2.5 μC (3) 9 μC (4) 4 μC

60. Transformer changes :
(1) DC current (2) DC voltage (3) AC voltage (4) AC & DC voltage

61. Lenzis law is based upon :
(1) law of conservation of energy
(2) law of conservation of angular momentum
(3) law of conservation of momentum
(4) law of conservation of charge

62. Two thin wires are separated by distance r and parallel to each other. If the current in each wire is I, the force per unit length experienced by one wire due to current in the other will be :
(1) $\frac{\mu_0 I^2}{2\pi r2}$ (2) $\frac{\mu_0 I^2}{4\pi r}$ (3) $\frac{\mu_0 I}{2\pi}$ (4) $\frac{\mu_0 I^2}{2\pi r}$

63. The relation between current and maximum current I_m at half power points in resonant circuit will be :

(1) $I = \frac{I_m}{2\sqrt{2}}$ (2) $I = I_m\sqrt{2}$ (3) $I = \frac{I_m}{2}$ (4) $I = \frac{I_m}{\sqrt{2}}$

64. In LCR circuit the voltage and current are given by the equations: $E = E_0 \sin \omega t$ and $I = I_0 (\omega t - \phi)$ than which statement is correct :

(1) $\cos\phi = \frac{R}{\left(\omega L - \frac{1}{C\omega}\right)}$

(2) $\sin\phi = \frac{\left(\omega L - \frac{1}{C\omega}\right)}{R}$

(3) $\tan\phi = \frac{\left(\omega L - \frac{1}{C\omega}\right)}{R}$

(4) $\tan\phi = \frac{\omega L}{R}$

65. The potential due to electric dipole a point is :

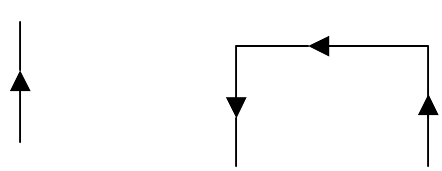
(1) $K\left(\frac{\vec{p} + \vec{r}}{r^3}\right)$ (2) $K\left(\frac{\vec{p} + \vec{r}}{r^3}\right)$

(3) $K\left(\frac{\vec{p} - \vec{r}}{r^3}\right)$ (4) $K\left(\frac{\vec{p} \cdot \vec{r}}{r^3}\right)$

66. The magnetic field due to a current carrying wire element will be maximum when the angle between the current element and position vector is :

(1) $\pi/2$ (2) $\pi/4$ (3) π (4) zero

67. A straight current carrying wire and loop are placed according to the figure. If the current is according to the figure :



(1) loop will move towards the wire
(2) loop will move away from the wire
(3) loop will rotate around the wire
(4) no change

68. The rate of heat produced in resistance of 10 ΩΩin a.c. circuit is 250 watt per sec. the current in the resistance will be :
(1) 0.5 amp. (2) 2.5 amp. (3) 5 amp. (4) 1.25 amp.

69. The mean life of a radioactive substance is equal to :
(1) $\frac{1}{\sqrt{\lambda}}$ (2) $\sqrt{\lambda}$ (3) $\frac{1}{\lambda}$ (4) λ

70. The half life of a radioactive substance is 25 days. The 25 gm. sample of this substance will reduce is 150 days to :

(1) 0.375 gm. (2) 0.75 gm. (3) 1.5 gm. (4) 4 gm.

71. The wavelengths associated with photons and electron are same, the ratio of their momentum will be :
(1) 1 : 1 (2) 2 : 1 (3) 1 : 3 (4) 1 : 3

72. Work function for a surface is equal to :
(1) ϕ = fermi energy – binding energy
(2) ϕ =fremi energy
(3) ϕ = binding energy – fermi energy
(4) ϕ = binding energy

73. If the pressure of a gas is doubled at constant temperature, then the velocity of sound in the gas becomes :
(1) unchanged (2) $\sqrt{2}$ times (3) half (4) double

74. In black body radiations for maximum emission the wavelength $\lambda\lambda_m$ shifted with increase of temperature of black body :
(1) at some temp. towards shorter side and others towards longer side
(2) towards higher wavelength
(3) towards shorter wavelength
(4) no shift

75. If the temp. of a body is make amount of radiated energy will become :
(1) 16 times (2) half (3) two times (4) four times

76. If light ray is reflected from the denser medium, the path difference produced in the reflected ray will be :
(1) $\lambda/4$ (2) $\lambda/2$ (3) λ (4) zero

77. The one mole of an ideal gas is compressed adiabatically from temp. 27^0 C to 1020 C the work done in the process will be : (r = 1.5)

(1) 1000.25 J (2) – 1245 J (3) -928.75 J (4) -622.5 J

78. The absence of atmosphere on the surface of any planet is :

(1) V_{rms} is greater than escape velocity
(2) Average kinetic energy gas molecules is negligible to the gravitational force on the planet
(3) V_{rms} less than escape velocity
(4) None

79. In a closed container the mass of molecule is 3×10^{-27} kg. and velocity of molecule is 10 m/sec. If the no. of molecules in the container is 10^{24}, the pressure will be :

(1) 100 N/m^2 (2) 10 N/m^2 (3) 1 N/m^2 (4) 0.5 N/m^2

80. The heat given a system is Δ Q and change in internal energy of system is du and if work done is ΔW, the correct relation between all three quantities :

(1) $\Delta Q = \Delta W - dU$ (2) $dU = \Delta Q - \Delta W$ (3) $\Delta W = \Delta Q + dU$ (4) $\Delta W = \Delta Q - dU$

81. Absorption coefficient of an ideal blackbody is :

(1) less then 1 (2) 1 (3) zero (4) infinity

82. The V^{rms} of O2 at 27^0 C is V on the same temp. the Vrms of atomic oxygen is V' than:

(1) $V' = \frac{V}{2}$ (2) $V' = \frac{V}{\sqrt{2}}$ (3) $V' = \frac{V}{2}$ (4) $V' = \sqrt{2}\,V$

83. If one gm. of water at 1000 C converted into vapour of 1000 C the external work done in this process will be :

(1) 2100 watt (2) 2100 erg (3) 2100 J (4) 2100 cal

84. Of which the velocity is equal to light velocity :

(1) cathode ray (2) X-rays (3) positive ray (4) all

85. In young double slit experiment the two coherent sources are separated by 2 mm. the distance of screen is 1m. If the fringe width is 0.03 cm. the wavelength of light will be:

(1) 6000 Å (2) 5890 Å (3) 5000 Å (4) 4000 Å

86. The horns of two cars emit the sound of natural frequency 240 Hz. One of the car is moving towards one observer with velocity 4 m/sec. and the other car is moving away from the observer with the same velocity. The no. of beat heard by the observer will be (V_{air} = 320 m/sec.) :

87. The max. value of magnetic field in a electric field 3.2×10^{-4} v/m (max. value) :

(1) 0.94×10^{-14} T (2) 0.94×10^{10} T (3) 1.07×10^{-12} T (4) 1.07×10^{-9} T

88. 1 amu is equal to :

(1) 931 MeV (2) 931 eV (3) 9.30 eV (4) 931 KeV

89. 1 amp. current flow is a circuit when a cellisconnected to 1 Ω resistance and 0.5 amp. to a 3 Ω resistance. The internal resistance of cell is :

(1) 2 Ω (2) 1.0 Ω (3) 1.5 Ω (4) 0.5 Ω

90. Function of a grid in a triode is :

(1) to increase plate voltage
(2) to decrease plate voltage
(3) to reduce the effect of space charge
(4) None

91. If $r_p = 3 \times 10^3$ Ω and g_m = 20 m. mho if triode is used as an amplifier and R_L = 6 kΩ, then voltage amplification is :

(1) 40 (2) 60 (3) 20 (4) 30

92. Ge at absolute temp is a :

(1) super cond. (2) conductor (3) semi conductor (4) insulator

ANSWER SHEET

1.(4)	2.(4)	3.(4)	4.(4)	5.(3)	6.(2)	7.(3)	8.(4)	9.(3)	10.(1)	11.(1)
12.(3)	13.(3)	14.(4)	15.(3)	16.(2)	17.(2)	18.(2)	19.(4)	20.(2)	21.(3)	22.(2)
23.(1)	24.(4)	25.(3)	26.(3)	27.(2)	28.(2)	29.(1)	30.(2)	31.(1)	32.(3)	33.(4)
34.(1)	35.(3)	36.(3)	37.(4)	38.(4)	39.(1)	40.(3)	41.(4)	42.(4)	43.(1)	44.(4)
45.(3)	46.(2)	47.(4)	48.(2)	49.(2)	50.(2)	51.(1)	52.(4)	53.(2)	54.(3)	55.(1)
56.(3)	57.(1)	58.(4)	59.(1)	60.(3)	61.(1)	62.(4)	63.(4)	64.(3)	65.(4)	66.(1)
67.(2)	68.(3)	69.(3)	70.(1)	71.(1)	72.(4)	73.(1)	74.(3)	75.(1)	76.(2)	77.(2)
78.(1)	79.(3)	80.(4)	81.(2)	82.(4)	83.(3)	84.(2)	85.(1)	86.(2)	87.(3)	88.(1)
89.(2)	90.(1)	91.(1)	92.(4)							