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NEET PHYSICS PAPER SOLUTION 2020

FOCUS ON CURRENT ELECTRICITY,HEAT & MAGNETISM THEORY

1. A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth ?

(1) 48 N

(2) 32 N ✓

(3) 30 N

(4) 24 N

2. In a guitar, two strings A and B made of same material are slightly out of tune and produce beats of frequency 6 Hz. When tension in B is slightly decreased, the beat frequency increases to 7 Hz. If the frequency of A is 530 Hz, the original frequency of B will be :

(1) 523 Hz

(2) 524 Hz ✓

(3) 536 Hz

(4) 537 Hz

ANS-1 At earth $mg = 72$ N

$$g = \frac{GM}{R^2}, \quad g' = \frac{GM}{(R+h)^2}$$

$$\frac{g'}{g} = \frac{GM}{(R+h)^2} \cdot \frac{R^2}{GM} = \frac{R^2}{(R+R/2)^2} = \frac{R^2 \times 4}{9R^2}$$

$$g' = g\left(\frac{4}{9}\right), \quad mg' = mg\left(\frac{4}{9}\right)$$

$$mg' = 72 \times 4/9 = 32 \text{ N}$$

ANS-2

$f_A - f_B = 6$ — (1)

or

$f_B - f_A = 6$ — (2)

$$f = \frac{1}{2l}\sqrt{\frac{T}{m}}$$

$$f \propto \sqrt{T}$$

Tension B is slightly decreased then frequency of B will also decrease.

Then equation (1) is valid

$530 - f_B = 6$

$f_B = 530 - 6$

$= 524$ Hz

3. The capacitance of a parallel plate capacitor with air as medium is 6 μF. With the introduction of a dielectric medium, the capacitance becomes 30 μF. The permittivity of the medium is :

($\epsilon_0 = 8.85 \times 10^{-12}\ C^2 N^{-1} m^{-2}$)

(1) $0.44 \times 10^{-13}\ C^2 N^{-1} m^{-2}$

(2) $1.77 \times 10^{-12}\ C^2 N^{-1} m^{-2}$

(3) $0.44 \times 10^{-10}\ C^2 N^{-1} m^{-2}$ ✓

(4) $5.00\ C^2 N^{-1} m^{-2}$

ANS-3

$C = \frac{\epsilon_0 A}{d}$, $C' = \frac{K \epsilon_0 A}{d}$

$\frac{C'}{C} = K \Rightarrow K = \frac{30}{6} = 5$

$\epsilon = K\epsilon_0 = 5 \times 8.85 \times 10^{-12}$
$= 0.44 \times 10^{-10}\ C^2 N^{-1} m^{-2}$

4. A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale.

The pitch of the screw gauge is :

(1) 0.01 mm

(2) 0.25 mm

(3) 0.5 mm ✓

(4) 1.0 mm

ANS-4

pitch = Least count × Number of division on circular scale

$= .01 \times 50$

$= 0.5$ mm

5. A short electric dipole has a dipole moment of 16×10^{-9} C m. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is :

$$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ N m}^2/\text{C}^2\right)$$

(1) 50 V

(2) 200 V

(3) 400 V

(4) zero

ANS-5

$$V_P = \frac{1}{4\pi\epsilon_0} \frac{p \cos\theta}{r^2}$$ → for small dipole

$$= \frac{9 \times 10^9 \times 16 \times 10^{-9} \times \cos 60^\circ}{(0.6)^2}$$

= 200 Volt

6. A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to :

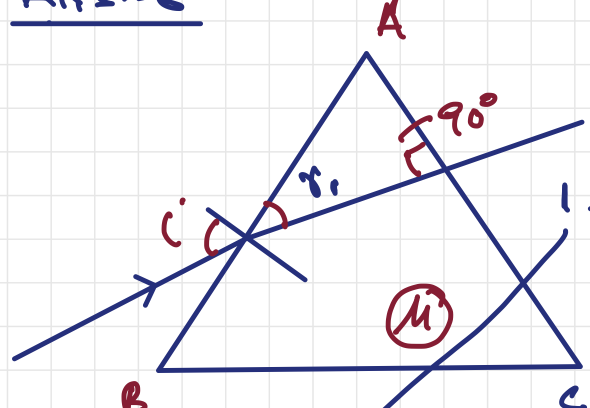
(1) $\frac{A}{2\mu}$

(2) $\frac{2A}{\mu}$

(3) μA

(4) $\frac{\mu A}{2}$

ANS-C



Apply snail's law at AB

$1 \sin i = \mu \sin r_1$

$i = \mu r_1$

$r_1 + r_2 = A$

$r_1 + 0 = A$

$r_1 = A$

$1 \sin i = \mu \sin A$

$i = \mu A$

7. A spherical conductor of radius 10 cm has a charge of 3.2×10^{-7} C distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere ?

$$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \ \text{N m}^2/\text{C}^2\right)$$

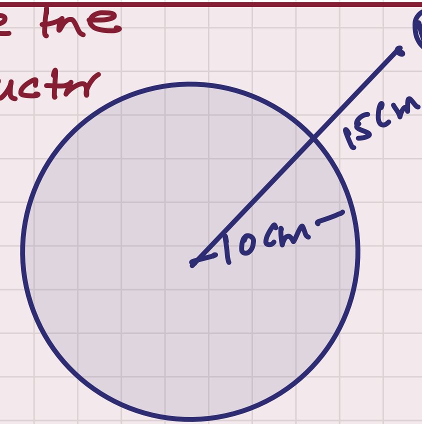
(1) 1.28×10^4 N/C
(2) 1.28×10^5 N/C ✓
(3) 1.28×10^6 N/C
(4) 1.28×10^7 N/C

ANS-7 → outside the spherical conductor

$$E = \frac{1}{4\pi\epsilon_0}\frac{q}{r^2}$$

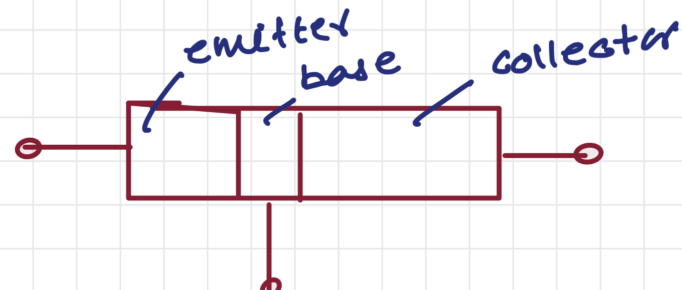
$$= \frac{9\times10^9 \times 3.2\times10^{-7}}{(15\times10^{-2})^2}$$

$$= 1.28\times10^5 \ \text{N/C}$$



8. For transistor action, which of the following statements is **correct** ?

(1) Base, emitter and collector regions should have same doping concentrations.
(2) Base, emitter and collector regions should have same size.
(3) Both emitter junction as well as the collector junction are forward biased.
(4) The base region must be very thin and lightly doped. ✓



Length of collector > length of emitter > length of base

DOPING

E > C > B

E → highly doped; C → moderately doped; B → less doped

9. Dimensions of stress are :

(1) $[MLT^{-2}]$

(2) $[ML^2T^{-2}]$

(3) $[ML^0T^{-2}]$

(4) $[ML^{-1}T^{-2}]$

10. In a certain region of space with volume $0.2\ m^3$, the electric potential is found to be 5 V throughout. The magnitude of electric field in this region is :

(1) zero

(2) 0.5 N/C

(3) 1 N/C

(4) 5 N/C

ANS-9

$$\text{STRESS} = \frac{\text{FORCE}}{\text{AREA}} = \frac{kg\ mt/sec^2}{mt^2} = \frac{kg\ mt}{mt^2\ sec^2} = M L^{-1} T^{-2}$$

ANS-10

If potential is constant through out the region it means it should be conducting region in which charge should always lie at the surface.

$$E = -\frac{dV}{dr} \qquad V = \text{constant}$$

$$E = 0$$

11. When a uranium isotope $^{235}_{92}U$ is bombarded with a neutron, it generates $^{89}_{36}Kr$, three neutrons and :

(1) ✓ $^{144}_{56}Ba$

(2) $^{91}_{40}Zr$

(3) $^{101}_{36}Kr$

(4) $^{103}_{36}Kr$

12. The increase in the width of the depletion region in a p-n junction diode is due to :

(1) forward bias only

(2) ✓ reverse bias only

(3) both forward bias and reverse bias

(4) increase in forward current

13. A ball is thrown vertically downward with a velocity of 20 m/s from the top of a tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is : (g = 10 m/s^2)

(1) 360 m

(2) 340 m

(3) 320 m

(4) ✓ 300 m

ANS-11

$$^{235}_{92}U + {}_0n^1 \rightarrow Kr^{89}_{36} + 3({}_0n^1) + X^A_Z$$

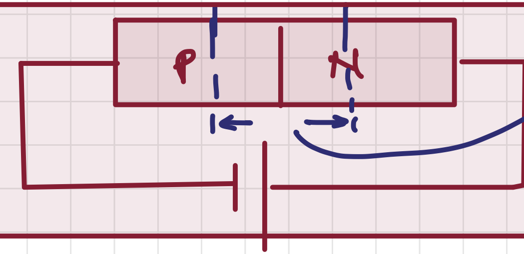
compare both the side

$$92 + 0 = 36 + 0 + Z \Rightarrow Z = 56$$

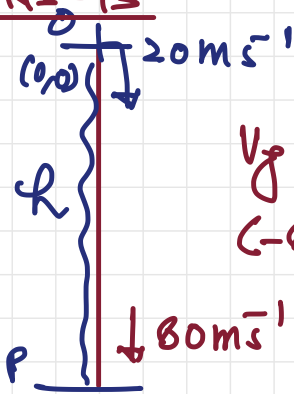
$$235 + 1 = 89 + 3 + A \Rightarrow A = 144$$

ANS-12

DIODE AS REVERSE BIASED



ANS-13



MOTION BETWEEN O & P

$$V_y^2 = u_y^2 + 2a_y S_y \qquad S_y = -h$$

$$V_y = -80\,ms^{-1},\; u_y = -20\,ms^{-1},\; a_y = -10\,ms^{-2}$$

$$(-80)^2 = (-20)^2 + 2(-10)(-h)$$

$$6400 = 400 + 20h$$

$$h = \frac{6000}{20} = 300\,mt$$

14. The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5\ r_2$) through 1 K are in the ratio :

(1) $\frac{27}{8}$ ✓

(2) $\frac{9}{4}$

(3) $\frac{3}{2}$

(4) $\frac{5}{3}$

ANS-14

$$\Delta Q = m\, s\, \Delta T$$

$$= \frac{4}{3}\pi r^3 \rho\, s\, \Delta T \Rightarrow \Delta Q \propto r^3$$

$$\frac{\Delta Q_1}{\Delta Q_2} = \left(\frac{r_1}{r_2}\right)^3 = (1.5)^3 = \frac{27}{8}$$

15. A cylinder contains hydrogen gas at pressure of 249 kPa and temperature 27°C.

Its density is : ($R = 8.3\ J\ mol^{-1} K^{-1}$)

(1) 0.5 kg/m^3

(2) 0.2 kg/m^3 ✓

(3) 0.1 kg/m^3

(4) 0.02 kg/m^3

ANS-15

$$PM = \rho RT \Rightarrow \rho = \frac{PM}{RT}$$

$$= \frac{(249 \times 10^3)(2 \times 10^{-3})}{(8.3) \times 300}$$

$$= 0.2\ kg/mt^3$$

16. For which one of the following, Bohr model is **not** valid ?

(1) Hydrogen atom

(2) Singly ionised helium atom (He^+) ✓

(3) Deuteron atom

(4) Singly ionised neon atom (Ne^+)

ANS-16

only valid for single electron.

more than one electron in orbit hence not valid.

17. A wire of length L, area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is :

(1) $\frac{MgL_1}{AL}$

(2) $\frac{Mg(L_1 - L)}{AL}$

(3) $\frac{MgL}{AL_1}$

(4) $\frac{MgL}{A(L_1 - L)}$

ANS-17 → $Y = \frac{Mg/A}{\Delta l/L}$

$\Delta l = L_1 - L$

$Y = \frac{Mg}{A} \frac{L}{(L_1 - L)}$

18. The solids which have the negative temperature coefficient of resistance are :

(1) metals

(2) insulators only

(3) semiconductors only

(4) insulators and semiconductors ✓

ANS-18 →

$R_t = R_0(1 + \alpha \Delta T)$

α is -ve for insulator & semiconductor

19. The phase difference between displacement and acceleration of a particle in a simple harmonic motion is :

(1) π rad

(2) $\frac{3\pi}{2}$ rad

(3) $\frac{\pi}{2}$ rad

(4) zero

ANS-19

DISPLACEMENT $y = a \sin \omega t$

Acceleration $A = -\omega^2 a \sin \omega t$

$A = \omega^2 a \sin(\omega t + \pi)$

compare both equation

phase difference $= \pi$

20. Light with an average flux of 20 W/cm^2 falls on a non-reflecting surface at normal incidence having surface area 20 cm^2. The energy received by the surface during time span of 1 minute is :

(1) 10×10^3 J

(2) 12×10^3 J

(3) 24×10^3 J

(4) 48×10^3 J

ANS-20

ENERGY RECEIVED

$=$ Intensity $\times$ AREA $\times$ time

$= 20 \times 20 \times 60$

$= 24 \times 10^3$ J

21. The ratio of contributions made by the electric field and magnetic field components to the intensity of an electromagnetic wave is : (c = speed of electromagnetic waves)

(1) c : 1

(2) 1 : 1 ✓

(3) 1 : c

(4) 1 : c^2

ANS-21

$U_{AVG}|_E = \frac{1}{2}\epsilon_0 E_0^2$

$U_{AVG}|_B = \frac{1}{2}\frac{B_0^2}{\mu_0}$

$E_0 = cB_0$

$U_{AVG} = \frac{1}{2}\epsilon_0 (cB_0)^2$

$= \frac{1}{2}\frac{B_0^2}{\mu_0} = U_{avg}$

Energy contribution in electric field and magnetic field are equal. Therefore the ratio of contribution be E & B is 1 : 1

22. In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes :

(1) double

(2) half

(3) four times

(4) one-fourth

ANS-22

$\beta = \frac{D\lambda}{d}$

$\beta_1 = \frac{D\lambda}{d}$ — ① | $\beta_2 = \frac{2D\lambda}{d/2}$ — ②

eqn ① / eqn ②

$\frac{\beta_1}{\beta_2} = \frac{D\lambda}{d} \times \frac{d}{2 \times 2D\lambda} = \frac{1}{4}$

$\beta_2 = 4\beta_1$

23. An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electron is 1.227×10^{-2} nm, the potential difference is :

(1) 10 V

(2) 10^2 V

(3) 10^3 V

(4) 10^4 V ✓

ANS-23

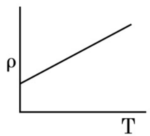
$$\lambda = \frac{12.27}{\sqrt{V}} \text{ Å}$$

$$\sqrt{V} = \frac{12.27 \text{ Å}}{\lambda} \Rightarrow \sqrt{V} = \frac{12.27 \times 10^{-10}}{1.227 \times 10^{-2} \times 10^{-9}}$$

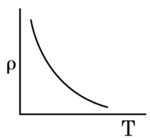
$$V = 10^4 \text{ Volt}$$

24. Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper ?

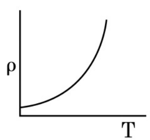
(1)



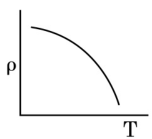
(2)



(3) ✓



(4)



ANS-24

conductor
↓
Avg relaxation time ↓ with ↑ in temp → Resulting ↑ in resistivity.

Variation of resistivity of copper with temp is parabolic in nature

25. The average thermal energy for a mono-atomic gas is : (k_B is Boltzmann constant and T, absolute temperature)

(1) $\frac{1}{2} k_B T$

(2) $\frac{3}{2} k_B T$

(3) $\frac{5}{2} k_B T$

(4) $\frac{7}{2} k_B T$

ANS-25

MONOATOMIC GAS → DEGREE OF FREEDOM = 3

Hence Avg Thermal energy per molecule = $\frac{3}{2} k_B T$

26. A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of the solenoid is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

(1) 6.28×10^{-4} T

(2) 3.14×10^{-4} T

(3) 6.28×10^{-5} T

(4) 3.14×10^{-5} T

ANS-26 →

$B = \mu_0 n I$

$B = 4\pi \times 10^{-7} \times 200 \times 2.5$

$= 6.28 \times 10^{-4}$ tesla

$n = N/l$

$= \frac{100}{50 \times 10^{-2}}$

$= 200$ turn/m

27. An iron rod of susceptibility 599 is subjected to a magnetising field of 1200 A m^{-1}. The permeability of the material of the rod is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

(1) $2.4\pi \times 10^{-4}$ T m A^{-1} ✓
(2) 8.0×10^{-5} T m A^{-1}
(3) $2.4\pi \times 10^{-5}$ T m A^{-1}
(4) $2.4\pi \times 10^{-7}$ T m A^{-1}

ANS-27

$\chi_m = 599$

$\mu_r = 1 + \chi_m = 600$

$\mu = \mu_r \mu_0$

$= 600 \times 4\pi \times 10^{-7}$

$= 2400\pi \times 10^{-7}$

$= 2.4\pi \times 10^{-4}$ T m A^{-1}

28. Taking into account of the significant figures, what is the value of 9.99 m – 0.0099 m ?

(1) 9.9801 m
(2) 9.98 m ✓
(3) 9.980 m
(4) 9.9 m

ANS-28

$$\begin{array}{r} 9.99 \\ -\ 0.0099 \\ \hline 9.9801 \end{array}$$ mt

⇓

9.98 → mt

29. A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in an electric field of 3×10^{-10} Vm^{-1}, has a mobility in m^2 V^{-1} s^{-1} of :

(1) 2.25×10^{15}

(2) 2.5×10^{6}

(3) 2.5×10^{-6}

(4) 2.25×10^{-15}

ANS-29

$$\mu = \frac{v_d}{E} = \frac{7.5 \times 10^{-4}}{3 \times 10^{-10}} = 2.5 \times 10^{6}\ \text{mt}^2\,V^{-1}\,s^{-1}$$

30. Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass.

The centre of mass of the system from the 5 kg particle is nearly at a distance of :

(1) 33 cm

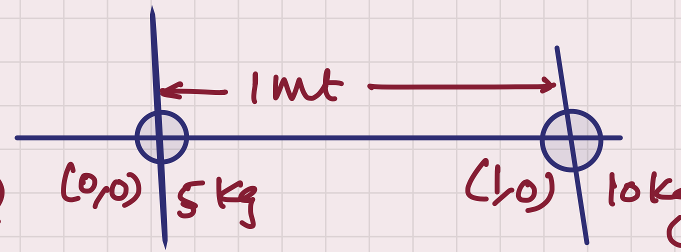
(2) 50 cm

(3) 67 cm ✓

(4) 80 cm

ANS-30 –

$$\bar{x} = \frac{m_1 x_1 + m_2 x_2}{m_1 + m_2} = \frac{m_1(0) + m_2(1)}{m_1 + m_2} = \frac{10 \times 1}{10+5} = \frac{10}{15} = \frac{2}{3}\ \text{mt} = \frac{2}{3} \times 100 = \frac{200}{3} \simeq 67\ \text{cm}$$



31. The mean free path for a gas, with molecular diameter d and number density n can be expressed as :

(1) $\frac{1}{\sqrt{2}\, n\pi d}$

(2) $\frac{1}{\sqrt{2}\, n\pi d^2}$ ✓

(3) $\frac{1}{\sqrt{2}\, n^2\pi d^2}$

(4) $\frac{1}{\sqrt{2}\, n^2\pi^2 d^2}$

ANS-31 → According to $\lambda = \frac{1}{\sqrt{2}\, n\pi d^2}$

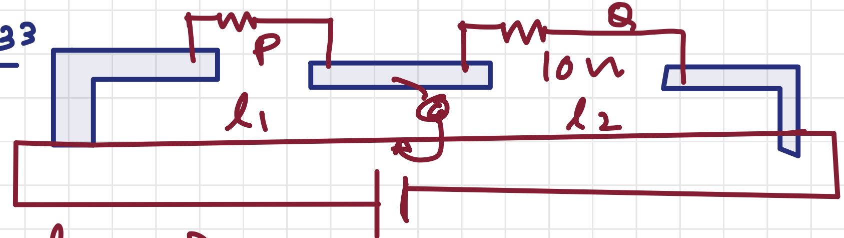
please mug up this formula

32. The energy equivalent of 0.5 g of a substance is :
(1) 4.5×10^{16} J
(2) 4.5×10^{13} J
(3) 1.5×10^{13} J
(4) 0.5×10^{13} J

ANS-32 →
$E = mc^2 = 0.5 \times 10^{-3} (3 \times 10^8)^2$
$= 4.5 \times 10^{13}$ J

33. A resistance wire connected in the left gap of a metre bridge balances a 10 Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5 m, then the length of 1 Ω of the resistance wire is :
(1) 1.0×10^{-2} m
(2) 1.0×10^{-1} m
(3) 1.5×10^{-1} m
(4) 1.5×10^{-2} m

ANS-33



$\frac{P}{10} = \frac{l_1}{l_2} = \frac{3}{2} \Rightarrow P = \frac{30}{2} = 15$ ohm, $R = \frac{\rho l}{A}$
$\frac{R_1}{R_2} = \frac{l_1}{l_2} \Rightarrow \frac{15}{1} = \frac{1.5}{l_2} \Rightarrow l_2 = 0.1$ mt
$= 1 \times 10^{-1}$ mt

34. The Brewsters angle i_b for an interface should be :
(1) $0° < i_b < 30°$
(2) $30° < i_b < 45°$
(3) $45° < i_b < 90°$
(4) $i_b = 90°$

ANS-34 → $\mu = \tan i_b$ $1 < \mu < \infty$
$1 < \tan i_b < \infty$
$\tan^{-1}(1) < i_b < \tan^{-1}(\infty)$
$45° < i_b < 90°$

35. A capillary tube of radius r is immersed in water and water rises in it to a height h. The mass of the water in the capillary is 5 g. Another capillary tube of radius 2r is immersed in water. The mass of water that will rise in this tube is :

(1) 2.5 g
(2) 5.0 g
(3) 10.0 g ✓
(4) 20.0 g

ANS-35

$F_B = 2\pi r T \cos\theta = mg$

$m \propto r$

$\frac{m_2}{5} = \frac{2r}{r} \Rightarrow m_2 = 10\,g$

36. Find the torque about the origin when a force of $3\hat{j}$ N acts on a particle whose position vector is $2\hat{k}$ m.

(1) $6\hat{i}$ N m
(2) $6\hat{j}$ N m
(3) $-6\hat{i}$ N m ✓
(4) $6\hat{k}$ N m

ANS-36

$\tau = \vec{r} \times \vec{f} = (2\hat{k} \times 3\hat{j})$

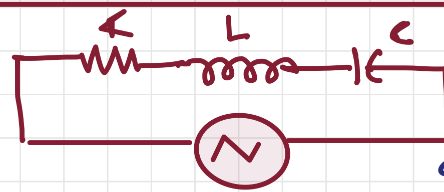
$= 6(\hat{k} \times \hat{j}) = -6\hat{i}$

$\hat{k} \times \hat{j} = -\hat{i}$

37. A series LCR circuit is connected to an ac voltage source. When L is removed from the circuit, the phase difference between current and voltage is $\frac{\pi}{3}$. If instead C is removed from the circuit, the phase difference is again $\frac{\pi}{3}$ between current and voltage. The power factor of the circuit is :

(1) zero
(2) 0.5
(3) 1.0 ✓
(4) − 1.0

ANS-37



case-1
L is removed

$\cos\pi/3 = \frac{R}{\sqrt{R^2 + X_C^2}}$

case-2 - C removed

$\cos\pi/3 = \frac{R}{\sqrt{R^2 + X_L^2}}$

EQUATE

$\frac{R}{\sqrt{R^2 + X_C^2}} = \frac{R}{\sqrt{R^2 + X_L^2}} \Rightarrow X_L = X_C$

Hence Resonance

$\cos\phi = 1$

38. The energy required to break one bond in DNA is 10^{-20} J. This value in eV is nearly :

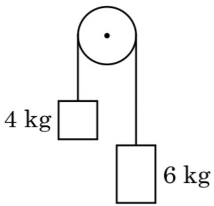
(1) 6

(2) 0.6

(3) 0.06 ✓

(4) 0.006

39. Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is :



(1) g

(2) g/2

(3) g/5

(4) g/10

ANS-38 → $1 eV = 1.6 \times 10^{-19}$ J

$$10^{-20} J = \frac{10^{-20}}{1.6 \times 10^{-19}} eV$$

$$= .06 eV$$

ANS-39

for 6 kg block

$6g - T = 6a$ — (1)

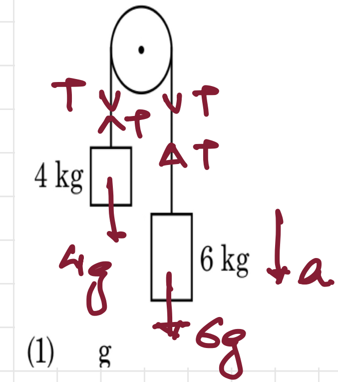
for 4 kg block

$T - 4g = 4a$ — (2)

ADD, equation (1) & (2)

$2g = 10a$

$$a = \frac{2g}{10} = g/5 \ m s^{-2}$$



40. A 40 μF capacitor is connected to a 200 V, 50 Hz ac supply. The rms value of the current in the circuit is, nearly :

(1) 1.7 A

(2) 2.05 A

(3) 2.5 A

(4) 25.1 A

ANS-40 → $V_{rms} = I_{rms} X_C$

$I_{rms} = \frac{V_{rms}}{(1/2\pi f C)} = V_{rms}(2\pi f C)$

$I_{rms} = (220)(2\times 3.14\times 50\times 40\times 10^{-6})$

$= 2.5\ A$

41. The color code of a resistance is given below :

The values of resistance and tolerance, respectively, are :

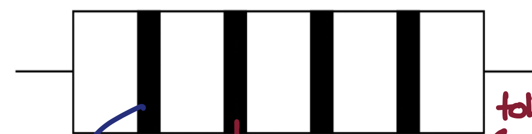
(1) 470 kΩ, 5%

(2) 47 kΩ, 10%

(3) 4.7 kΩ, 5%

(4) 470 Ω, 5% ✓

ANS-41



$47\times 10^1 \pm 5\%$ ⇐

$470 \pm 5\%$

42. Assume that light of wavelength 600 nm is coming from a star. The limit of resolution of telescope whose objective has a diameter of 2 m is :

(1) 3.66×10^{-7} rad ✓

(2) 1.83×10^{-7} rad

(3) 7.32×10^{-7} rad

(4) 6.00×10^{-7} rad

ANS-42

$$\theta_R = \frac{1.22\lambda}{D}$$

$$= \frac{1.22 \times 600 \times 10^{-9}}{2}$$

$$= 3.66 \times 10^{-7} \text{ Radian}$$

43. Two cylinders A and B of equal capacity are connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is :

(1) isothermal

(2) adiabatic ✓

(3) isochoric

(4) isobaric

ANS-43

↳ system is thermally insulated, so no heat exchange takes place, hence ADIABATIC

44. Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled ?

(1) doubled

(2) four times

(3) one-fourth

(4) zero ✓

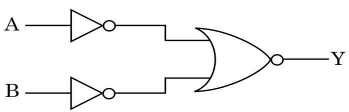
ANS-44

$$h\nu = h\nu_0 + (KE)_{max}$$

$$h\nu - h\nu_0 = (KE)_{max}$$

If ν is halved, no emission of electron, even if Intensity is increased.

45. For the logic circuit shown, the truth table is :



(1) ✓

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(2)

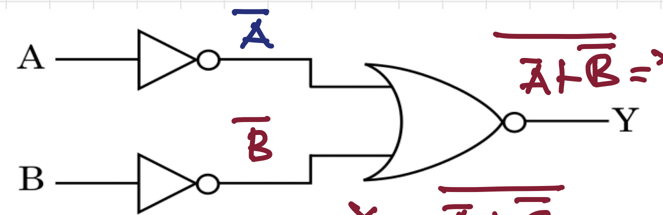
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(3)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(4)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0



$\overline{\bar{A} + \bar{B}} = Y$

A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1

$$Y = \overline{\bar{A} + \bar{B}}$$

$$= \bar{\bar{A}}\,\bar{\bar{B}}$$

$$= AB$$

(AND GATE)

Remember Demorgan's Law

$$\overline{AB} = \bar{A} + \bar{B}$$

$$\overline{A+B} = \bar{A}\,\bar{B}$$

Rough work

Rough work