

50) How does a semiconductor behaves at 0K?

Sol<sup>n</sup> Insulator.

51) JKD College Dergaon

51) Give the dimension of Tesla

Sol<sup>n</sup>  $F = qv$   $\Rightarrow [B] = \left[ \frac{MLT^{-2}}{AT \times LT^{-1}} \right]$   $B = \frac{F}{qv}$   
 $\Rightarrow B = \frac{F}{qv}$   $= [ML^0T^{-2}A^{-1}]$   $\text{unit of } B$   
 $\text{BT} = \frac{N}{C \times ms} = \frac{NS}{cm}$

52) show that weber = volt x second.

Sol<sup>n</sup> ~~weber = volt x sec~~  
 $wb = T m^2$   $\Rightarrow wb = \frac{N}{C} \times m \times s$   $\Rightarrow wb = \text{volt} \times \text{Sec}$   
 $= \frac{NS}{cm} \times m^2$   $= \frac{J}{C} \times s$

53) what is quantisation of charge? (सिद्धि)

Sol<sup>n</sup> ~~R and L represents~~

54) If R and L represents resistance and Inductance respectively then what is the dimension of  $L/R$ ?

Sol<sup>n</sup>  $Q = \frac{w_0 L}{R} = \frac{1}{R} \sqrt{\frac{L}{C}} = \frac{1}{w_0 R}$

$\Rightarrow [Q] = \left[ \frac{w_0 L}{R} \right]$   $\Rightarrow \left[ \frac{L}{R} \right] = \left[ \frac{M^0 L^0 T^0}{T^{-1}} \right]$

$\Rightarrow \left[ \frac{L}{R} \right] = \left[ \frac{Q}{w_0} \right]$   $= [M^0 L^0 T^1]$



55) what is an  $\alpha$ -particle ?

sol<sup>n</sup> → doubly ionised He atom i.e.  $\text{He}^{2+}$  is called  $\alpha$ -particle

56) what is reverse saturation current ? (It is independent of reverse voltage)

sol<sup>n</sup> → The current flows through a semiconductor diode due to the diffusion of minority charge carriers when it is in reverse biased.

57) Define mobility of a charge carrier ?

sol<sup>n</sup> → SI unit =  $\frac{\text{m/s}}{\text{V/m}} = \text{m}^2/\text{Vs}$

PAT TERM CLASSES

Nagam list:

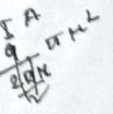
58) The property which differentiates the two kinds of charge is called \_\_\_\_\_ (polarity/mass/force) of charge

59) Dielectric strength of air  $3 \times 10^6 \text{Vm}^{-1}$  ?

60) SI unit of mobility  $\frac{\text{m}^2}{\text{Vs}}$  ?

61) The magnetic moment of a current loop of radius  $r$  varies as as -

(i)  $r^4$  (ii)  $r^2$  (iii)  $\frac{1}{r^2}$



62) Diamagnetism in superconductor is called Meissner effect

63) Dimension of Inductance

(a)  $[ML^2T^{-1}A^{-2}]$  (b)  $[MT^2A^{-1}]$  (c)  $[MLT^{-2}A^{-2}]$



64) What happens to the inductive reactance when the frequency of AC supply is increased?

Sol<sup>n</sup>  $X_L = \frac{V}{I} = \frac{1}{2\pi fL}$   $X_L = \omega L$   $\Rightarrow X_L = 2\pi fL$   $\Rightarrow X_L \propto f$  | Thus the inductive reactance increases with increase in the frequency of AC supply.

65) What is the phase difference between electric and magnetic field in e-m wave—

- (a) 0 (b)  $\pi$  (c)  $\pi/2$

66) For prism, angle of minimum deviation occurs when —

- (a)  $i > e$  (b)  $i < e$  (c)  $i = e$

**PATTERN CLASSES**

67) A photocell is a device which

- (i) convert light energy into electricity  
(ii) convert electricity into light energy  
(iii) store light energy

68) An atom has nearly continuous mass distribution in —  
(Thomson's model / Rutherford's model)

69)  $\theta$



69) A. p-type semiconductor is —

- (i) Positively charged
- (ii) Negatively charged
- (iii) Neutral

70) Kokrajhar district

70) Write down the device name of device, which is used to detect charge?

Ans → Electroscope ( বিদ্যুৎ পরীক্ষক )

71) Write down the dimension of electric flux?

Ans →  $\phi_E = \vec{E} \cdot \vec{A}$  |  $\Rightarrow [\phi] = \frac{[MLT^{-2}]}{[AT]} [L^2]$   
 $[\phi] = [E][A]$  |  $= [ML^3 T^{-3} A^{-1}]$   
 $= \left[\frac{E}{a}\right][A]$

72) Write down one limitation of Ohm's law.

Ans: Ohm's law is not applicable for non-linear devices like diode and transistor it is only applicable for linear devices like resistor.

73) What is Lorentz force?

Ans → The total force on a charge particle moving in an electro-magnetic field is called Lorentz force.

$$\vec{F} = q\vec{E} + q(\vec{v} \times \vec{B}) \quad | \quad \vec{F} = q[\vec{E} + (\vec{v} \times \vec{B})]$$

74) What is Meissner Effect?

Ans →