**ECE**                                          **Batch : Hinglish**

# Subject : Electronics Device & Circuits      DPP - 01
## Chapter : 01
## Chapter-Basic SC Physics

**[MCQ]**
1. Thermal voltage $V_T$ depends on

    (a) Temperature non linearly.

    (b) Temperature linearly.

    (c) Temperature inversely.

    (d) None of these.

**[MCQ]**
2. Energy gap $E_g$ in a semiconductor

    (a) Increases with increase in temperature.

    (b) Decreases with decrease in temperature.

    (c) Does not depend on temperature.

    (d) Increases with decreases in temp.

**[MCQ]**
3. Energy gap $E_g$ is

    (a) Low in insulators and high in semiconductors.

    (b) High in insulators as well as in semiconductors.

    (c) Low in insulators as well as semiconductors.

    (d) Low in semiconductors and high in insulators.

**[MCQ]**
4. Mobility of charge carriers

    (a) Increases with temperature at low temp ranges.

    (b) Decrease with temperature at low temp ranges.

    (c) Increases with temperature at high temp ranges.

    (d) None of these.

**[MCQ]**
5. Mobility is depends on temperature as;

    (a) $\mu \propto T^{-3/2}$ at low temperature ranges.

    (b) $\mu \propto T^{3/2}$ at high temperature ranges.

    (c) $\mu \propto T^{-3/2}$ at high temperature ranges.

    (d) $\mu \propto T$ at low temperature ranges.

**[MCQ]**
6. Mobility $\mu$ depends on

    (a) Temperature as well as electric field intensity.

    (b) Temperature but independent of electric field intensity.

    (c) Electric field intensity but independent of temp.

    (d) None of these

**[MCQ]**
7. Conductivity of semiconductor depends on

    (a) Only the mobility of change carriers.

    (b) concentration of change carriers only.

    (c) Product of concentration of charge carriers and mobility.

    (d) Product of electric field intensity and concentration of charge carriers.

**[NAT]**
8. Variation of drift velocity with electric field is as given below : →
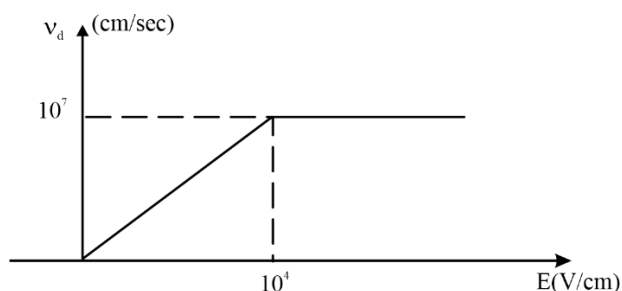


    Then at applied electric field of $10^5$ V/cm, the mobility of charge carriers will be _____ cm$^2$/V-sec.

**[MCQ]**

**9.** In a semiconductor, concentration of electrons $n = 10^{10}/cm^3$ and intrinsic carrier concentration $n_i = 1.5 \times 10^{10}/cm^3$ then concentration of holes is

(a) $1.5 \times 10^{10}/cm^3$

(b) $2.25 \times 10^{10}/cm^3$

(c) can't be determine as doping concentration is not given.

(d) $10^{10}/cm^3$.

**[MCQ]**

**10.** Intrinsic carriers concentration in a semiconductor–A is $(n_i)A$ and in semiconductor–B is $(n_i)_B$. If energy gap $(E_g)_A > (E_g)_B$ then

(a) $(n_i)_A > (n_i)_B$

(b) $(n_i)_B > (n_i)_A$

(c) $(n_i)_A = (n_i)_B$

(d) $(n_i)_A = [(n_i)_B]^2$

# Answer Key

| | |
|---|---|
| 1. **(b)** | 6. **(a)** |
| 2. **(b)** | 7. **(c)** |
| 3. **(d)** | 8. **(100)** |
| 4. **(b)** | 9. **(b)** |
| 5. **(c)** | 10. **(b)** |