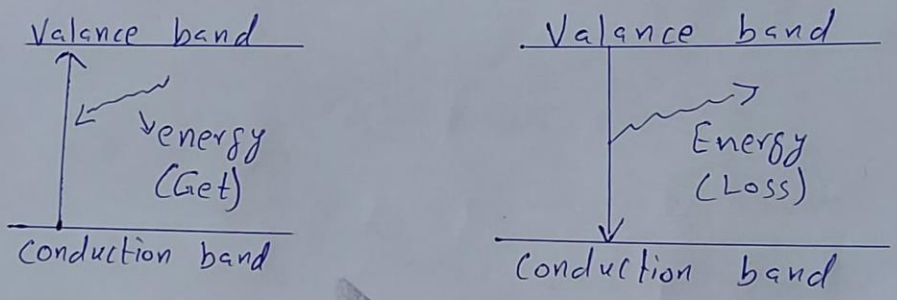
Name: M. Abbas
ID : 13063
Dept : CS[SE]

Applied Physics
Mid Term Paper

Q1 (a)

Ans 1 (a) When electron gets energy, it goes from low state to high state and it produce hole. When electron loss energy. It comeback to its specific state.

Diagram:-



↳ When electron goes from conduction band to valance band it produce hole, after losing energy the electron pole pair recombination phenomena occurs.

Q1 B

Ans:- Barrier Potential is always indirectly Proportional to ~~temperatior~~ temperature.

$$B \propto \frac{1}{T}$$

When temperature increase barrier Potential will be decreasing. (thickness will be produced).

x ——— x ——— x ——— x

Q2 (A)

Ans:- Majority Carrier:-

The ability to flow maximum charge from one point to anothe is called Majority Carrier.

Minority Carrier:-

The ability to flow minimum charge from one point to another is called Minority Carrier.

N-Type:- Electrons are in Majority charge Carrier.

NType:- Electrons are in Minority charge Carrier.

(Q2 B)

Ans:-

Avalanche breakdown usually occurs when we apply a high reverse voltage across the diode.

Due to Avalanche breakdown the high current can be produce. in inculator.

(OR)

Avalance breakdown occurs in a Pn Junction diode which is moderately doped and has a thick junction (means its depletion lager width is high). Avalanch breakdown usually occurs when we apply a high reverse voltage across the diode.

" If applied reverse voltage is Va and the depletion lager width is d;

Then the generated electric field can be calculated as Ea = Va/d. "

x ——— x ——— x ——— x

(Q3 A)

Ans:- When attraction between two same charges increase the electric potential energy will be produce.

Examples-

When we have two same charges (q1) and (q2). If (q1) charge is fixed and (q2) charge get close to (q1) the repultion will be produced if produce energy that energy is known as electric potential energy.

$$U = K \frac{q_1 q_2}{r}$$

(U) = E Potential Energy.

(K) = Coulomb Constant.

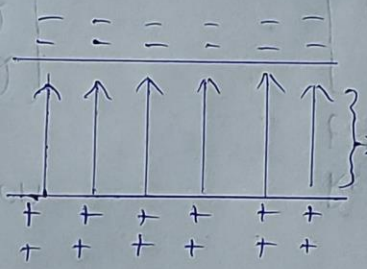
(q1 & q2) = Two same charges.

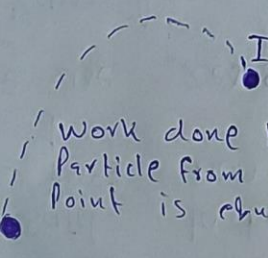
(r) = Distance between two same charges.

Electric Potential:-

The ability to flow a unit charge from reference point to given point in electronic field.

Diagram:-





Q3 B

Ans:- we can find the potential difference between any two points in the electrice field lines by given equation.

$$\Delta V = V_b - V_a = \frac{\Delta PE_e}{q_o} = \frac{q_o E d}{q_o}$$

$$\boxed{\Delta V = Ed}$$

Since work done by the field itself equals ΔPE_e:

$$\boxed{W_{b \to a} = q_o \Delta V}$$