

## Mid Term Assignment

Subject Name: Applied Physics

Class: BS SE-1, CS-1

Instructor: M Khalid Hamid Submission

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**ID: 12994**

**Name: Shabban Khan**

Note: Attempt all Questions

Q1:

- a. **Discuss the significance of the knee of the characteristics curve in forward Bias?**

Ans: The significance is the knee of the characteristics curve in forward bias is the point which the barrier potential is overcome and current will increase rapidly.

- b. **What happens to the barrier potential when the temperature increases?**

Ans: barrier potential decreases as the temperature increases

Q2:

- a. **Compare the depletion regions in forward bias and reverse bias?**

Ans: Depletion region in forward bias is narrow compared to reverse bias the depletion Region is wider

- b. **When does reverse breakdown occur in a diode?**

Ans: If the external reverse-bias voltage is increased to a value (50 V or larger) at this stage the reverse breakdown occurs

Q3:

- a. **Find the difference between electric potential energy and electric potential?**

Ans: The basic difference between electric potential and electric potential energy is the electric potential at a point in electric field is the amount of work done to bring the unit positive charge from infinity to that point, while electric potential energy is the energy that is needed to move a charge against the electric field

- b. **How to find the potential difference between any two points in the electric field lines?**

Ans: Equation  $V = Ed$

In a uniform electric field, the equation to calculate the electric potential difference is super easy:  $V = Ed$ . In this equation,  $V$  is the potential difference in volts (or Joules per coulomb),  $E$  is the electric field strength in the area (in newtons per coulomb), and  $d$  is the distance between the two plates (in meters).