

Physics - 12th Class Physics Chapter 7 Short Questions Preparation

Q1. What is the potential barrier? What is the value of potential barrier of Si and Ge?

Ans 1: The potential difference across the depletion region which acts as a barrier to the flow of charge carriers is called potential barrier. The value of potential barrier for germanium is 0.3V and for silicon is 0.7 V.

Q2. What is the role of potential barrier in a diode? How it is formed in diode?

Ans 1: At the formation of pn-junction, the free electrons in n-region because of their random motion diffuse into the p-region. As a result of this diffusion a region is formed around the junction consisting of positive and negative ions. Due to charge on these ions a potential difference develops across the depletion region. This potential difference is called potential barrier, stops further diffusion of electron into the p-region.

Q3. Write a note on LED.

Ans 1: Light emitting diode are made from the special semiconductor such as gallium arsenide and gallium arsenide phosphide in which the potential barrier between p and n side is such that when electrons combine with a hole during forward biased conduction, a photon of visible light is emitted. LED are used in 7-segment display, small light sources etc.

Q4. Give any two characteristics of operational amplifier.

Ans 1: Input Resistance: It is the resistance between the + and - input of the amplifier, whose value is of the order of several mega ohms.
Output resistance: It is the resistance between the output terminal and ground. Its value is only a few ohms.

Q5. Why charge carriers are not present in the depletion region?

Ans 1: This is due to the fact when an electron from an n region diffuses into the p-region, it leaves behind a positive ion. When this electron recombines with the hole in the p-region, a negative ion is formed. So no charge carrier are available in this region, though it contains immobile positive and negative ions.

Q6. Why the biasing requirement of the junction of a transistor for its normal operation?

Ans 1: For the normal operation the base emitter junction of transistor is forward biased and collector base junction is reverse biased.

Q7. How the normal operation of transistor is achieved?

Ans 1: For the normal operation the base emitter junction of transistor is forward biased and collector base junction is reverse.

In a common emitter amplifier, input signal is applied between base and emitter and output signal is taken across collector and emitter. Similarly emitter base junction is forward biased and collector base junction is reverse biased.

Q8. Explain why an ordinary Silicon diode does not emit light.

Ans 1: Ordinary silicon is opaque to light, so it does not emit visible light. It emits infrared light. To emit light, gallium arsenide or gallium arsenide photodiode are used as semiconductor.

Q9. What is meant by rectification?

Ans 1: The converting of alternating current signal into pulsating direct current signal is called rectification. The current for this purpose is called rectifier circuit.

Q10. How is the XOR gate so called?

Ans 1: One of its most commonly used applications is as a basic logic comparator which produces a logic "1" output when its two inputs bits are not equal. Because of this, the XOR gate has an inequality status being known as an odd function.
