

## Physics - ICS Part 2 Physics Chapter 18 Short Questions Preparation

Q1. Define Depletion region?

**Ans 1:** A region in a semiconductor device, usually at the junction of p-type and n-type materials, in which there is neither an excess of electrons nor of holes is called depletion region, it is a chargeless region.

Q2. 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 biased. 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.

Q3. Write a note on LED.

**Ans 1:** Light-emitting diodes are made from special semiconductors 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. LEDs are used in 7-segment displays, small light sources, etc.

Q4. How is p-n junction formed?

**Ans 1:** A p-n junction is formed when a crystal of germanium or silicon is grown in such a way that its one half is doped with a trivalent impurity and the other half with a pentavalent impurity.

Q5. Give two applications of gates in control systems.

**Ans 1:** Gates are widely used in control systems. They control the function of the system by monitoring some physical parameters such as temperature, pressure, or some other physical quantity of the system. Sensors are required to operate gates.

Q6. What is a semiconductor diode?

**Ans 1:** A p-n junction is called a semiconductor diode.

Q7. Why is 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.

Q8. The anode of a diode is 0.2V positive with respect to the cathode,It it forward biased?

**Ans 1:** Yes when anode is 0.2V positive with respect to cathode,it is forward biased.But the value of potential barrier for germanium is 0.3 V and for silicon is 0.7 V. Therefore there will be no conduction of current.

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Q9. Define logic system and logic gates.

**Ans 1:** A digital system deals with the quantities or variable which have only two discrete values or state. The electronic circuits which implements the various logic operation are known as logic gates.

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Q10. What do LED and LASER stand for?

**Ans 1:** LED stands for light emitting diode..  
Laser stands for light amplification stimulated emission radiation .

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