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 charge less region.

Q2. What is meant by rectification?

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

Q3. 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 is its one half is doped with a trivalent impurity and the other half with a pentavalent impurity.

Q4. 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.

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. What is the effect of forward biased and reverse biasing of a diode on the width of depletion region?

Ans 1: When forward biased then the width of depletion region decreases and when reverse biased then the width of depletion region increase.

Q7. How does the motion of an electron in n type substance differ from the motion of holes in a p type substance?

Ans 1: more mobile and rapid than holes in p-type substance because electrons do not require holes for their motions but p-type substance because electrons do not require holes for their motion but hole depend upon electrons for their motion,Both move in opposite direction.

Q8. 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.

Q9. Differentiate between the forward biased and the reserve biase.

Ans 1: When p side is positive and n-side is negative,the diode is forward biased.The width of depletion region reduces to which more current is allowed to flow across the junction.The forward resistance is few ohms.

Ans 2: When p side is negative and n side is positive,the diode is reserved biased.The width of depletion region is increased and a very small current flows across the junction due to flow of minority charges carriers,The resistance offered by the diode is several mega ohms.

Q10. How is the XOR gate so called?

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