NEME FAyyaz

Ahmad

ID 13460

subject Basic

electronic

Q1@ Explain how the transformer turns ratio effects the rectified output voltage of full wave rectifier?

Answer:: if the transformers turns ratio is 1 the peak value of the rectified output voltage equals half the peak value of the primary input voltage less the barrier potential. This is becuse half of the primary voltage appeses across each half of the secondary winding V_1 equals to the input peak so a step up Transformer with a turns ratio of $n=2$ must be used

$$V_{out} = (V_{s0}/2) - 0.7V \quad \%3D \text{sec}.$$

(2)

(b) Compare the center-tapped rectifier and Bridge rectifier?

(i) Center-tapped rectifier And Bridge rectifier :-

- The main difference blw a center Tapped a Bridge rectifier is that one uses center tapped Transformer while another do not require a center tapped transformer. Both these types are full wave rectifier but their method of converting AC input into DC is different by employing different number ~~number~~ diodes. in center tapped full wave rectifier two diodes are used whereas Four diod are used in bridge rectifiers

(c) List advantages and disadvantages of Rc filter and Lc filter?

Rc filters advantages:

~~Ans~~: 1) Reduced size and weight
2) increased reliablity and improved performance
3) in large quantities, the cost of an ic is less than its passive counterpart.

(d) Disadvantages

1) limited bandwidth of active devices
2) required power supplies
3) increased sensitively to variations in ~~vo~~ circuit parimeter.

(e) LC Filter Advantages

1) The choke input (LC) filter has a high output DC voltage
2) it has no loading effect on the rectifier
3) This diod does not have to carry surge currents

- Disadvantages:-

(1) it cannot be used together with half wave rectifier

(2) Due to inductor it produces the audiable noise

(3) it is not usefull for very low load currents

(4) There is loss of power in the series inductor due to its DC resistance.

Q2 (5)

a. What would be an advatage of a 50 Ω voltage source compared to a 600 Ω voltage source?

Answer.

For the 50 ohm voltage source, maximum power transfer will occur when the load has a appears as a resistance 50 ohms. Similarly, 600 ohms is required for max power transfer into an impedance that presents itself as 600 ohms. You need to maintain the integrity of the impedance at all points if you are to avoid reflections down the light and damaging the output PA. So, if you had an aterna rated at 50 ohms connected to a 50 Ohms feed then all things being equal SWR etc you be better with 50 ohms source. Some configurations of anterna may be "see" as presenting an impedence of say 580 Ohms in which case the 600 ohm may be the colest and best alternative.

B) Which approximation does the technician normally use when perfoming initial troubleshooting procedures? Why?

Answer:

Experienced technicians often use a type of statistical approach For troubleshooting procedures is the initial and basic process performed by the maintenace technician.

c) What are some of the reasons for using a Thevenin or Norton circuit?

Answer.

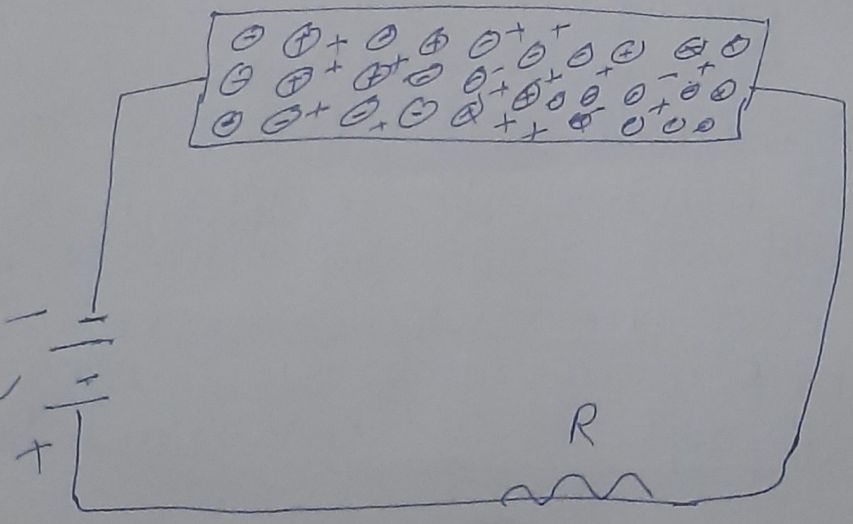
Thevenin and Norton equivalent circuits are fundamentalapproaches a circuit to analyzing both AC and DC circuits. it is important to understand the steps involved in converting a circuit to its Thevenin or Norton equivaled, but more important still is understang how these techniques can help you to analyze and design actual electronic devices. Thevenin's theorm states that any circuit composed of linear elements canbe simplified to a signd voltage source and a single series resistance (or series impedence for AC analysis).

North's theorem is the same except that the voltage source and series resistance are replaced by a current source and paralled resistance.

As with Thevenin's Theorem, everything in the original circuit except the load resistance has been reduced to an equivment circuit that is simpler to analyze. also similar to Thevenin's Theorem are the steps used in Norton's Theorem to calculate the Northon soure current (Norton) and Norton resistance (RNorto).

Q3a: Tell me why a very small current exists in a reverse-biased diode?

Ans: When the negative battery terminal is connected to p side and the positive battery terminal is connected to n side This connection produces reverse bias across the diode. The following is the circuit diagram of diode in reverse bias



Q3:b:- I want to know why a light emitting diod produces light. Tell me about it!

Answer:

A light-emitting diode (LED) is a semiconductor light source that emits lights when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons.

(C) Do holes flow in a conductor? Why or why not? What happens to holes when they reach the end of a semiconductor?

Answer:

Name: Semiconductor "Mark fox"

Holes do exist in conductors. It's only that it's very difficult to identify them as the conduction and valance bands overlap. It should be discernible as a funtion of temperature or magnetic field. Electron is said to be free in the conduction band. If only the external stress (optical) electron will stay for a time dependent on material characteristics and come back to lower energy state. you can find more answer about your interest in the book of optical properties of semiconductor "Mark fox"

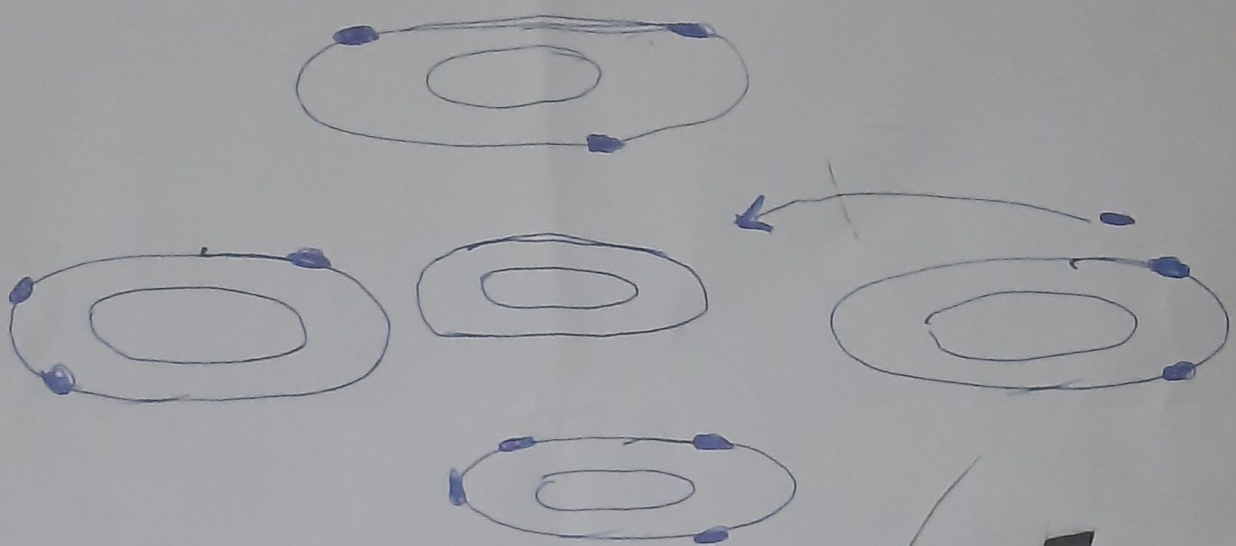
(D) Why is recombination important in a diode?

Answer:

In a pure Silicon crystal, the thermal energy create an equal number of free electrons and holes The free electronics move randomly throughout

the crystal. Occasionally, a free-electron will approach a hole, feed its attraction and fall into it. This is known as recombination. Because of the recombination energy is released.

The following is the figure showing the recombination of a free electron and a hole.



(E) What is surface leakage current?

Answer:

Defination of surface leakage current.

Diode reverse current that passes along the semicond materials.