

# CBSE UGC NET

Previous Year 2005-2015

Unsolved Question Paper

# Electronic Science

Paper-III (June-Dec)



## **ELECTRONIC SCIENCE**

### **PAPER – III**

**NOTE:** This paper is of two hundred (200) marks containing four (4) sections. Candidates are required to attempt the questions contained in these sections according to the detailed instructions given therein.

## SECTION - I

**Note :** This section contains five (5) questions based on the following paragraph. Each question should be answered in about thirty (30) words and each carries five (5) marks.

(5×5=25 marks)

The modern era of semiconductor electronics was ushered in by the invention of the bipolar transistor in 1948 by Bardeen, Brattain and Shockley at the Bell Telephone Laboratories. This device, along with its field effect counterpart, has had an enormous impact on virtually every area of modern life. The two dominant features of p - n junctions are the injection of minority carriers with forward bias and the variation of depletion width  $W$  with reverse bias. These two p - n junction properties are used in two important types of transistors. The Bipolar Junction Transistor (BJT) uses the injection of minority carriers across a forward biased junction. The Junction Field Effect Transistor (JFET), depends on the control of a junction depletion width under reverse bias. The FET is a majority carrier device and is therefore often called a unipolar transistor. The BJT, on the other hand, operates by the injection and collection of minority carriers. Since the action of both electrons and holes is important in this device, it is called a bipolar transistor.

1. Explain the various configurations of a BJT.





SECTION - II

Note : This section contains fifteen (15) questions each to be answered in about thirty (30) words. Each question carries five (5) marks.

(5x15=75 marks)

6. What is thin film resistor ? Discuss the steps of fabrication of thin film resistor. How can the value of the resistance be changed even after fabrication ?

7. State the maximum power transfer theorem and explain the theorem with the help of a suitable example.

8. Discuss the principle of Schmitt trigger with necessary diagram and explain its hysteresis loop.

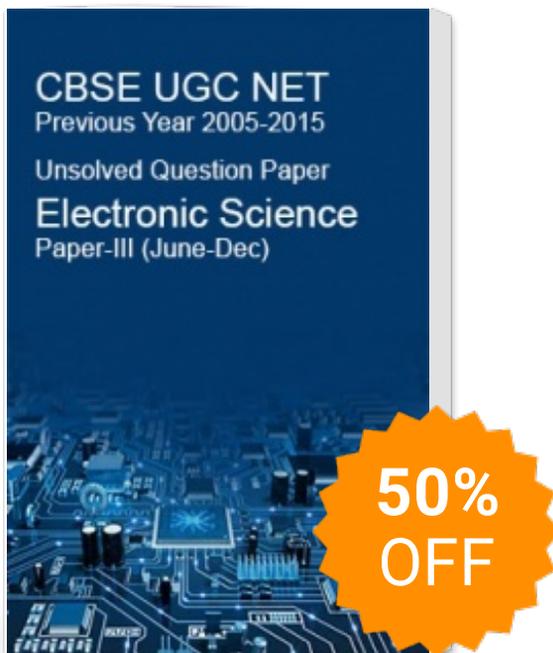


11. Write short notes on operators used in 'C'.

12. State and explain the Reciprocity theorem with respect to antennas.



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