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DEPARTMENT: COMPUTER SCIENCE (200 Level)

COURSE: DIGITAL LOGIC DESIGN (CSC 213)

Assignment

Compare and Contrast BJTs and FETs. Write up short notes or tabulate your answers.

Solutions

BJTs : means Bipolar Junction Transistors. A bipolar junction transistor is a type of transistor that uses both electrons and holes as charge carriers. BJTs are devices with three terminals: emitter, base and the collector.

FETs: means Field Effect Transistors. The field-effect transistor is a type of transistor that uses an electric field to control the flow of current. FETs are devices with three terminals: source, gate, and drain.

Similarities

BJTs and FETs are somewhat similar in that;

1. Both acts as switching devices in saturation regions or cut-off regions.
2. Both are amplifiers.
3. Both have independence matching circuit.
4. Both have 3 terminals.

Differences

BJTs and FETs have certain difference, below are some of the difference between the two types of transistor;

S/N	Bipolar Junction Transistors	Field Effect Transistors
1	It is a bijunction or bipolar device	It is a unijunction device
2	Its operation depends on both majority charge carriers and minority charge carriers.	It's operation depends on majority charge carriers which may be holes or electrons.

3	Input impedance of BJT is very less i.e (1k - 3k)	Input impedance of FET is very large.
4	It is the current control device.	It is the voltage-controlled device.
5	It is a temperature-dependent device.	It has better heat stability.
6	Its frequency variations affect their performance.	It has a high-frequency response
7	Its collector and base are more positive than the emitter.	Its Drain is positive, the gate is negative w.r.t to the source.
8	It requires a small amount of current to keep on.	They requires a small amount of voltage to keep on.
9	These are preferred for low current applications.	These are preferred for low voltage applications.
10	It has high voltage gain and low current gain.	It has low voltage gain and high current gain.