

BE 3rd semester E&TC Engineering Examination 2011
Electron Devices
(ET-303)
2nd Half

Answer any three questions from the following
2 marks are reserved for neatness in this half.

1. Why an uni-junction transistor is called a transistor? Draw its equivalent circuit. Explain the operation of an uni-junction transistor and draw its voltage – current characteristics.

[1+2+6+2]

2. Derive Eber-Moll equation for a transistor and write down its significance.

[11]

3. With proper assumptions derive the expression for the drain current of an n-channel MOSFET. Explain why gate protection of a MOSFET is essential?

[9+2]

4. Write down the characteristics of a JFET. Find out an expression for drain resistance of a JFET. How a FET can be used as a voltage variable resistor?

[2+7+2]

5(a) Draw the structure and equivalent circuit of an SDR IMPATT diode. Explain two phenomena which are responsible for the generation of negative resistance in an IMPATT diode.

- (b) How negative differential mobility can be achieved in a GUNN diode?

[(1+1+3)+6]

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