S.E. ETRX Sem(3) (CBGS) · 20/11/14.
Electronic Devices.

QP Code : 14541

(3 Hours) **[Total Marks : 80**

N.B. : (1) question **No. 1** is **compulsary** and solve any **Three** questions from remaining questions.
(2) Assume suitable data if necessary.
(3) Draw neat and clean figures.

1. Answer any **five** :
   (a) For the diodes, define forward voltage drop, maximum forward current, dynamic resistance, reverse saturation current & reverse brakdown voltage. **5**
   (b) Draw characteistics of Pn junction in thermal equilibrium? Explain. **5**
   (c) Define the contributing factors forwards the low frequency common base current gain of BJT. **5**
   (d) Define internal pinchoff voltage, pinchoff voltage & drain to source saturation voltage fo JFET, **5**
   (e) What are types of MOSFET? Explain. **5**
   (f) Explain consturction working & characeristics of UJT. **5**

2. (a) What is space charge width? Derive an expression for it, when the diode is forward biased and reverse biased. **10**
   (b) List the ideal conditions of BJT and explain the non-ideal effects. **10**

3. (a) Draw Ebers - Moll equivalent circuit of BJT & derive necessary expressions for current and voltages. **10**
   (b) Compare BJT, JFET & MESFET. **10**

(4) (a) What is channel length modulation in MOSFET? Derive necessary expression for the same. **10**
   (b) Explain construction, working & characeristics ot Tunnle diode - **10**

5. (a) What is HBT ? Explain construction & energy band diagram of the same. **10**

   (b) for an n - channel MOS transistor with $\mu n = 600\ cm^2/vs$, $C_{ox} = 7 \times 10^{-8}\ F/cm^2$, W = 20 μm, L = 2 μm and $V_{TO} = 1.0V$ Examine the relationship between the drain current & terminal voltages. **10**

6. Write short notes **20**
   (a) SCR
   (b) Solar Cell
   (c) Photo diode
   (d) IGBT

GN-Con.:6449-14.