

Registration no:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 01

M.TECH
VLPC103

1st Semester M.Tech Regular/ Back Examination 2015-16
SEMICONDUCTOR DEVICE-MODELING AND SIMULATION
Branch: VLSI & EMBEDDED SYTEMS

Time: 3 Hours

Max Marks: 70

Question Code:T932

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions: (2 x 10)
- a) Enlist the assumptions on which the ideal diode equations are obtained.
 - b) How are the diode model parameters affected by the SPICE2 parameter AREA?
What is the default value for the AREA parameter?
 - c) What are the second order effects that are modeled using Gummel Poon BJT model?
 - d) Draw the structure of MOST with proper labels.
 - e) To specify a transistor model what are the requirements of a program like SPICE?
 - f) How is the measurement of Fast Surface Stated NFS carries out in the weak inversion region for a MOST?
 - g) Draw the complete MOST small-signal equivalent circuit with noise sources.
 - h) Differentiate between Noise and Distortion.
 - i) What are the two improvements of the Statz model over the Curtice Model of GaAs MESFET?
 - j) Draw the thyristor static characteristics with proper labeling.
- Q2 What are the limitations of the ideal diode model? Discuss in brief. (10)
- Q3 Discuss the static diode of BJT and its implementation in SPICE2. (10)
- Q4 Discuss the JFET Static model and its implementation in SPICE2. (10)
- Q5 Discuss the implementation of Level 1 static model of MOST. (10)
- Q6 How are the static parameter measurement of BJT carried out? (10)
- Q7 What is the principle of operation of ISFET? Discuss the SPICE 2 ISFET models. (10)
- Q8 Write Short Notes on any two of the following: (5 X 2)
- a) Ebers Moll Large Signal Model
 - b) JFET large signal model
 - c) MOST parameter measurement
 - d) Noise sources
 - e) Curtice model of GaAs MESFET