Roll No .....

MEVD - 204

M.E./M.Tech., II Semester

Examination, June 2013

Micro Electronics

Time : Three Hours

Maximum Marks : 70

Note: Answer all questions. Section (a) is compulsory from each question. Asnwer two sections from each question. All questions carry equal marks.

1. a) Explain different effects produced due to charge transportation in a semi conductor 7

   b) Describe importance of arrangement of atoms in the semiconductor materials. 7

   c) Discuss motion of electron in a periodic lattice. 7

2. a) Applying the quantum concepts, derive the schrodinger wave equations. 7

   b) Explain carrier generation and recombination theory. 7

   c) Derive expression to determine Fermi level and also draw label diagram. 7

3. a) Differentiate between elemental and compound semiconductors. Also describe the principle of probability and uncertainty. 7

   b) Derive the complete expression of continuity equation. 7

   c) Effects of temperature on mobility and conductivity. 7

4. a) Discuss Boltzmann Transports equation. 7

   b) Explain Ebers-moll model for modeling of BJT. 7

   c) What are heterojunction bipolar transistors? How does it successfully operate at high frequencies. 7

5. a) Discuss BJT modeling using nonuniform doping. 7

   b) Derive expression for all types of capacitances associated with p-n junction. 7

   c) Explain small signal model of BJT with CE configuration. 7