

Roll No

MEVD-204

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

Examination, December 2016

Microelectronics

Time : Three Hours

Maximum Marks : 70

- Note :* i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain the theory of quantum mechanics and discuss its importance.
b) Discuss the band theory of solids.
2. a) Discuss the principle of recombination with respect to electrons and holes.
b) What do you mean by effective mass of electron, derive mathematical equations?
3. a) Discuss the concept of carriers in semiconductors.
b) Explain the transport mechanisms in semiconductors.
4. a) What do you mean by life time of an carrier? Discuss in detail.
b) What is high field effect, Explain in detail.
5. a) What are the different types of breakdowns in P-N junction? Explain them.

- b) Explain the working of BJT as a switch with suitable diagram.
6. a) Explain Ebers-moll model of transistor.
b) Explain the P-N junction working in forward and reverse bias configurations.
7. a) What do you mean by high current and high frequency effects?
b) What do you understand by energy band diagram for semiconductors and conductors?
8. Write short notes on any two :
 - a) Small signal model
 - b) Non uniformly doped transistors
 - c) Electron motion in periodic lattice
