Total No. of Questions : 8]   [Total No. of Printed Pages : 2

Roll No ....

MEVD-204

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

Examination, December 2017

Microelectronics

Time : Three Hours

Maximum Marks : 70

Note :   i)   Attempt any five questions out of eight.

    ii)   All questions carry equal marks.

    iii)   Assume suitable data, if required.

1. a)   Give an introductory note on quantum mechanics theory. Derive a relation for electron movement.

   b)   Explain the body effect in BJT devices. Draw and explain the basic DC equations of BJT.

2. a)   Give a brief introduction on BJT. Draw and explain its input and output VI characteristic curves.

   b)   Discuss about the motion of electron in periodic lattice.

3. a)   Discuss about the band theory of solids in quantum mechanics.

   b)   Discuss about the lifetime and recombination theory in semiconductor devices.

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4. a)   Explain the concept of majority charge carriers in transistor devices with its working and principle.

   b)   Derive a relation for Boltzmann transport equation.

5. a)   Write any five differences between the avalanche and zener breakdown in diode.

   b)   Explain the difference between the pn junction and pn junction diode.

6. a)   Discuss about the carrier transport in semiconductors which includes high field effect theory.

   b)   Explain Ebers Moll model and small signal model. Derive its relations.

7. a)   Discuss about the Tunnel Diode. Discuss about its practical applications.

   b)   Discuss about the IMPATT Diode. Write its applications.

8.   Write short notes (any four):

   a)   Switching characteristics of transistor devices

   b)   Non uniformly doped transistors

   c)   Effective Mass

   d)   Hot Electron Devices

   e)   Semi conductor Laser

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