

B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Second Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U07EC206: Electron Devices

Time: Three Hours

Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. The concentration of minority carriers in an extrinsic semiconductor under equilibrium is
 - a. Directly proportional to the doping concentration
 - b. Inversely proportional to the doping concentration
 - c. Directly proportional to the intrinsic concentration
 - d. Inversely proportional to the intrinsic concentration
2. The band gap of silicon at room temperature is
 - a. 1.3 eV
 - b. 0.7 eV
 - c. 1.1 eV
 - d. 1.4 eV
3. The drift velocity of electrons, in silicon
 - a. Is proportional to the electric field for all values of electric field
 - b. Is independent of the electric field
 - c. Increases at low values of electric field and decreases with high values of electric field exhibiting negative differential resistance
 - d. Increases linearly at low values of electric field and gradually saturates at high values of electric field
4. In the energy band diagram of an open circuited PN junction, the energy band of N region has shifted relative to that of P regionwhere E_0 equals qV_0
 - a. Downward by E_0
 - b. Upward by E_0
 - c. Downward by $E_0/2$
 - d. Upward by $E_0/2$
5. A Tunnel diode is used
 - a. In high power circuits
 - b. In circuits requiring negative resistance
 - c. In very fast switching circuits
 - d. In power supply rectifiers
6. Which diode operates only with majority carriers
 - a. Laser
 - b. Tunnel
 - c. Schottky
 - d. Step recovery
7. The Eber – Molls model is applicable to
 - a. Bipolar Junction Transistors
 - b. NMOS Transistors
 - c. Unipolar junction Transistors
 - d. Junction field effect Transistors

b) Draw the energy band diagram of an open circuited PN junction and obtain an expression for the contact difference of potential.

23. a) From the energy band diagram, explain the V-I characteristics of a tunnel diode.

(OR)

b) Describe the construction and working of

i) Photodiode and ii) LED

24. a) With the help of suitable diagrams, explain the working of different types of MOSFET.

(OR)

b) Draw the circuit diagram of a NPN junction transistor CE configuration and describe the static input and output characteristics.

25. a) Draw the equivalent circuit of UJT and explain its operation with the help of emitter characteristics.

(OR)

b) What is TRIAC? Sketch its characteristics and describe its operation.
