

Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No.

EC-304(N)

B. E. (Third Semester) EXAMINATION, Feb., 2010

(New Scheme)

(Electronics & Communication Engg. Branch)

ELECTRONIC DEVICES

[EC - 304(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks.

Unit - I

1. (a) Describe in your own words the conditions established by forward and reverse bias condition on a *p-n* junction diode. Describe how diffusion and transition capacitances differ.
- (b) Determine the range of values of V_i that will maintain the Zener diode of fig. 1 in the on state.

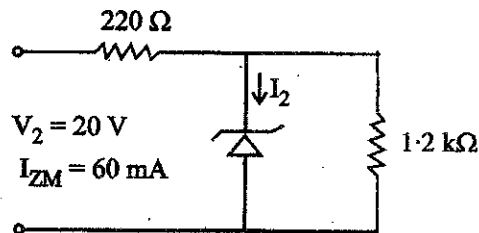


Fig. 1

P. T. O.

8

Or

2. (a) Explain Hall effect and its applications.
- (b) Explain the working of full wave bridge rectifier.

Unit – II

3. (a) For the network of fig. 2 determine the range of R_L and I_L that will result in V_{RL} being maintained to 10 V. Also determine the maximum wattage rating of the diode.

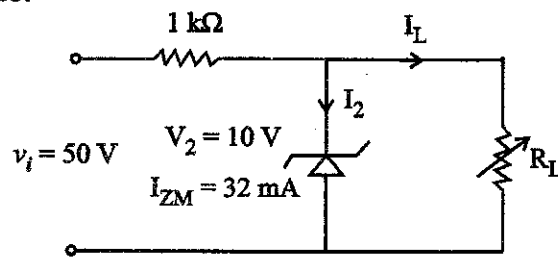


Fig. 2

- (b) With the help of VI characteristic explain the working of tunnel diode.

Or

4. Explain the following :
 - (a) Schottky diode
 - (b) Optocouplers

Unit – III

5. (a) Explain the working of CB configuration of transistor supported by input, output characteristic and current equations.
- (b) Explain the principle of working of UJT.

Or

6. (a) Explain the different regions of operation of transistor.
- (b) Explain Ebers Moll model.

Unit – IV

7. (a) Explain the principle of working of FET. What is voltage controlled resistance region ?
(b) Given, $I_{DSS} = 6 \text{ mA}$ and $V_P = -4.5 \text{ V}$:
(i) Determine I_D at $V_{GS} = -2$ and -3.6 V
(ii) Determine V_{GS} at $I_D = 3$ and 5.5 mA

Or

8. (a) In what ways is the construction of a depletion type MOSFET similar to that of a JFET. In what ways is it different ? Explain why the application of a positive voltage to the gate of an n -channel depletion type MOSFET will result in a drain current exceeding I_{DSS} .
(b) Explain the basic operation and characteristics of n -channel depletion type MOSFET.

Unit – V

9. Write short notes on the following :
(a) SCR
(b) GTO

Or

10. Write short notes on the following :
(a) Diac
(b) IGBT