Reg. No. : | | | | | | | | | | |

Question Paper Code: 50428

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Second Semester

Electronics and Communication Engineering

15UEC208 - ELECTRONIC DEVICES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. At room temperature the current in an intrinsic semiconductor is due to

   (a) hole (b) ions (c) electrons (d) holes and electrons

2. A pn junction diode has

   (a) low forward and high reverse resistance
   (b) a non-linear v-i characteristics
   (c) zero forward current till the forward voltage reaches cut in value
   (d) all the above

3. If for a silicon n-p-n transistor, the base to emitter voltage (V_{BE}) is 0.7 V and the collector to base voltage V_{CB} is 0.2 V, then the transistor is operating in the

   (a) inverse active mode (b) saturation mode
   (c) normal active mode (d) cut off mode

4. When an input signal reduces the channel size, the process is called

   (a) enhancement (b) substrate connecting
   (c) gate charge (d) depletion

5. SCR turns off from conducting state to blocking state on

   (a) reducing gate current
   (b) reversing gate voltage
   (c) reducing anode current below holding current value
   (d) applying AC to the gate

PART - B (5 x 3 = 15 Marks)

6. State mass action law.

7. List the advantages of bridge rectifier.

8. Define the three operating regions of bipolar junction transistor.

9. Which device is called as unipolar device? Why?.

10. Construct two transistor model of SCR.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Compare drift current and diffusion current. (6)

(ii) Compare the energy band structure of conductor, semiconductor and insulator. (10)

Or

(b) Classify the semiconductors. Explain the formation of semiconductors. (16)

12. (a) Discuss the operation of a PN junction diode under zero bias, forward bias and reverse bias condition. (16)

Or

(b) Explain the operation of full wave rectifier and discuss about the different parameters. Also draw necessary input and output waveforms. (16)

13. (a) Explain the principles of operation of NPN and PNP transistors with diagram. (16)

Or

(b) With a neat block diagram explain the switched mode power supply. (16)

14. (a) Explain the constructional details, operation characteristics and advantages of JFET. (16)

Or

(b) Describe the principle and working of depletion mode and enhancement mode of MOSFETS and compare them. (16)

15. (a) Explain the construction, working principle and VI characteristics of TRIAC. (16)

Or

(b) Construct and explain the operation of UJT with its equivalent circuit and emitter characteristics. (16)