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COLLEGE OF ENGINEERING, ANNA UNIVERSITY

Degree : B.E/B.Tech (Full time)

Regulations : 2004

Branch : Electronics and Communication Engg.

Semester : II

Subject Code No. / Subject Title : EC181 – Electronic Devices

Time: 3 Hours

Max.marks: 100

Answer ALL questions

**PART-A**

(10X2=20 marks)

1. Give examples for trivalent and pentavalent impurities.
2. Draw the energy band diagram of n-type semiconductor.
3. Relate current and voltage in a PN junction diode.
4. What are the features of Schottky barrier diode?
5. What are the operating modes of bipolar transistor?
6. Relate beta cutoff frequency and cutoff frequency of bipolar transistor.
7. Which operating region of JFET resembles a constant current source?
8. Differentiate enhancement mode and depletion mode MOSFET.
9. What are the power bipolar transistor characteristics?
10. List few applications of UJT.

**PART- B**

(5X16=80 marks)

11. a. Derive Fermi level for intrinsic semiconductor.  
b. Explain briefly about Hall effect.
12. a i. Explain the VI characteristics of PN Junction diode.  
ii. Discuss briefly about turn-on and turn-off transients of a diode.  
(or)  
b. Explain the operation of Tunnel diode in various operating regions with its VI Characteristics curve.
13. a. Derive the low frequency current gain of common base amplifier.  
(or)  
b. Derive the Ebers-Moll model of npn transistor
14. a. Derive the current voltage relationship in various operating regions of MOSFET.  
(or)  
b. Discuss briefly about the non-ideal effects of MOSFET.
15. a i. With neat diagrams explain the structures of power MOSFET.  
ii. Discuss the effect of heat sink in power transistors.  
(or)  
b. i. Explain the VI characteristics of SCR.  
ii. Write short notes on TRIAC.