

Roll No. :

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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. Distinguish between intrinsic and extrinsic semiconductors.
2. What is meant by Hall effect?
3. Draw the small signal equivalent circuit of PN junction diode.
4. List the two types of reverse-bias breakdown in a pn junction diode.
5. What is meant by early effect?
6. What is the cutoff frequency of bipolar transistor?
7. Draw the transfer characteristics of JFET.
8. What is the threshold voltage of MOSFET.
9. What are the features of power MOSFET?
10. List few applications of Triac.

PART- B

(5X16=80 marks)

11. a. Derive total current density of ideal pn junction diode.
b. Explain the energy band diagram of Schottky barrier diode with all biasing conditions.
12. a. Describe the effect of adding donor and acceptor impurity atoms to semiconductor.
(or)
b. i. Find the total drift current density of a semiconductor.
ii. Derive Einstein relation.
13. a. With neat circuit diagram, explain the operation of common base amplifier.
(or)
b. Derive the Ebers-Moll model of npn transistor
14. a. Explain the VI characteristics of MOSFET with its cross section diagrams for various values of V_{DS} and V_{GS} .
(or)
b. Discuss briefly about the non-ideal effects of MOSFET.
15. a. i. Explain the safe operating area of power BJT.
ii. Discuss the effect of thermal resistance on junction temperature of a device.
(or)
b. i. Explain triggering of SCR for AC input voltage.
ii. Write short notes on Gallium Arsenide devices.