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ANNA UNIVERSITY : CHENNAI 600 025

Department of Electronics and Communication Engineering

B.E./B.Tech(Full time)-Arrear - End Semester Examinations-Nov/Dec 2013

EC8201- Electronic Devices Semester: 2 R 2012

Time: 3 Hrs

Answer all Questions

Max. Marks: 100

PART - A

(10 x 2 = 20 marks)

1. Define the term Diffusion of carrier and Drift in an electric field with its appropriate equations.
2. Draw the circuit for Zener regulator and use the node equation to solve the Zener current I_z .
3. Draw the large signal BJT model and define its regions.
4. Draw a simple npn transistor circuit and also draw the I-V characteristics showing the early effect for it.
5. Draw the physical structure and symbol of p-channel and n-channel depletion MOSFET.
6. Draw the JFET small signal ac model and define the various parameters with its equations.
7. Draw the symbol and construction of a Schottky diode and also draw the V-I characteristics.
8. Define LAZER and LDR diode. List few applications of it.
9. Write the equation for efficiency of solar cell and give the typical levels of it with few applications.
10. Draw the collector characteristics, symbol and radiation flux density of a phototransistor.

PART - B

(5 x 16 = 80 marks)

11. Explain with neat circuit and its ac equivalent of the E-MOSFET with drain - feedback configuration and voltage-divider configuration. Derive the input impedance, output impedance and voltage gain with neat circuits.
12. a. For what voltage will the reverse current in a p-n junction Germanium diode reach 90% of its Saturation value at room temperature of 27°C .
b. What is the ratio of the current for a forward bias of 0.05V to the current for the same magnitude reverse bias?
c. If the reverse saturation current is 10micro amps, calculate the forward current for voltages of 0.1, 0.2 and 0.3V, respectively.

OR

- b. Explain how charge Q is produced by a forward conducting diode with neat proof and also Describe the storage or Diffusion capacitance C_D .

13. a(i). Prove the common emitter to common collector h parameter conversion with neat circuit model.
a(ii). Draw and explain the hybrid π model of CE configuration at low frequencies and derive the various parameters.

OR

- b. Discuss the operation of Common Base configuration with neat characteristics and also discuss the significance of Base-width modulation with neat diagrams.

- 14 a. Sketch and discuss the construction and characteristics of JFET and p-channel depletion - type MOSFET.

OR

- b(i). Describe why the VMOS FET can withstand a higher current and power rating than devices constructed with standard techniques.
(ii). Why do VMOS FET's have reduced channel resistance levels?
(iii). Why is a positive temperature coefficient desirable?

P.T.O.

15a. Sketch and discuss the construction and characteristics of SCR and UJT with applications of it.

OR

b. Write short notes on any two:

(i). Charge coupled devices

(ii). Optocouplers

(iii). Tunnel diode
