EC/EEE 123 (R-22)

Total No. of Questions : 10] [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, AUGUST - 2024

Second Semester

EC / EEE

ELECTRONICS DEVICES AND CIRCUITS

Time : **Three Hours** Maximum : **70** Marks

Answer ONE Question from each Unit.

All Questions carry equal marks. 5x14=70 M

UNIT - I

1. a) Draw and explain V-I characteristics of PN diode.

   b) Derive the equation for ripple factor of half wave rectifier with C-filter.

(OR)

2. a) With suitable wave forms explain bridge rectifier.

   b) Explain the Voltage regulation using Zener Diode.

UNIT - II

3. a) Illustrate and explain active region, saturation region and cut-off region in transistor characteristics.

   b) Explain in detail about how transistor acts as an amplifier.

(OR)

4. a) Write the differences between CB, CE and CC Amplifier Configurations.

   b) Differentiate between NPN and PNP transistors.

UNIT - III

5. a) What is the necessity of biasing circuits ? Derive the expression for stability factor of self bias circuit.

   b) Discuss the stabilization against variations in VBE and β.

(OR)

6. a) Derive the equation for stability factor for fixed bias.

   b) What is thermal runaway ? Explain how it can be avoided.

P.T.O.

UNIT - IV

7. a) Draw and explain the Voltage Divider Biasing.

   b) Draw and explain drain and transfer characteristics of depletion type MOSFET.

(OR)

8. a) Write short notes on Small Signal Model of JFET.

   b) Explain the operation of Depletion mode MOSFET in detail.

UNIT - V

9. a) How does a CB amplifier differ from a CE amplifier in a small signal low-frequency circuit ?

   b) How does the small signal analysis of a CB amplifier differ from that of a CC amplifier using the hybrid model ?

(OR)

10. a) In single-stage amplifiers, what distinguishes the small signal analysis of a CB amplifier from a CE amplifier ?

    b) What is the purpose of employing the CE configuration in small signal low-frequency amplifiers ?