

Subject Code: 24EC11RC04

R-24

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GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

(Affiliated to Andhra University, Visakhapatnam)

B.Tech. - I Semester Regular Examinations, December / January – 2025

Elements of Electronics Engineering [24EC11RC04]

(Common to CSE-AIML)

1. All questions carry equal marks
2. Must answer all parts of the question at one place

Time: 3Hrs.

Max Marks: 70

UNIT-I

1. a. write a brief mass action law and explain the different types of semiconductors. [7M]
b. Explain about the forbidden gap energy levels and what is the significance of it. [7M]

OR

2. a. Discuss the intrinsic carrier concentration for silicon at room temperature. How does it compare with other semiconductors like germanium? [7M]
b. Discuss the temperature dependency of conductivity in semiconductors?

UNIT-II

3. a. Explain the VI Characteristics of PN Junction diode and distinguish between the characteristics of silicon diode and germanium diode? [7M]
b. The voltage across a silicon diode at a room temperature (300K) is 0.7v when 2mA current flows through it. If the voltage increases to 0.75V. Calculate the diode current. Assume $V_T = 26mV$. [7M]

OR

4. a. Draw the circuit of a full wave rectifier with the Capacitor section filter and explain its operation with the help of input and output wave forms? [7M]
b. Define the following terms with the reference to rectifiers: Ripple factor, PIV, %Regulation, %Rectification and compare the values for Halfwave and Full wave rectifiers? [7M]

UNIT-III

5. a. Explain the CB Configuration input and output characteristics? [7M]
b. Explain fixed bias with the help of circuit diagram and derive it's stability factor [7M]

OR

6. a. Explain the current amplification factors for all three types of transistor configurations [7M]
b. Draw the common emitter circuit of a junction transistor. Sketch its output characteristics [7M] and Indicate the active, saturation and cut-off regions.

UNIT-IV

7. a. Explain about the Two stage RC Coupled Amplifier? [7M]
b. Derive transistorized amplification parameters for CB Configuration? [7M]

OR

8. a. Derive transistorized amplification parameters for CE Configuration? [7M]
b. Compare the transistorized amplification parameters for all three types of configurations? [7M]

UNIT-V

9. a. Explain the constructional details and operation of JET? [7M]
b. Explain the constructional details and operation of n-channel MOSFET? [7M]
- OR
10. a. Explain the terms of transconductance, pinchoff voltage, amplification parameters of JFET? [7M]
b. Explain the differences between the FET and BJT? [7M]