Subject Code:24EC11RC03 **R-24** **Reg No:** | | | | | | | | | | | | |

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)
(Affiliated to Andhra University, Visakhapatnam)
B.Tech. - I Semester Regular Examinations, December / January – 2025

BASIC ELECTRONICS ENGINEERING

(Electrical and Electronics Engineering)

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. Explain how to interpret resistor color codes and illustrate the process with suitable examples. [7M]
   b. Describe the functionality of each block in a CRO with a neat diagram. [7M]

OR

2. a. Outline the role of a capacitor in an electric circuit and mention the different types of capacitors in detail. [7M]
   b. Compare the Step-Up and Step-Down Transformer. [7M]

UNIT-II

3. a. Illustrate the operation of PN diode and its V-I Characteristics. [7M]
   b. Explain the working of a Half-wave Rectifier with necessary waveforms and derive the expression for the ripple factor. [7M]

OR

4. a. Describe the characteristics of extrinsic semiconductor and compare N-type and P-type semiconductors. [7M]
   b. Draw a Zener diode voltage regulator circuit and explain how it regulates a stable output voltage. [7M]

UNIT-III

5. a. Explain the physical structure of a transistor and describe its different operation modes. [7M]
   b. Analyze the input and output characteristics of a BJT in a Common Base (CB) configuration, and discuss the effect of base width modulation. [7M]

OR

6. a. Explain how a transistor functions as an amplifier. [7M]
   b. Analyze the self-bias transistor circuit configuration and derive the expression for its stability factor. [7M]

UNIT-IV

7. a. Explain the principle of operation of a n-channel JFET and draw its characteristics. [7M]
   b. Classify the biasing methods used for MOSFET. [7M]

OR

8. a. Discuss the drain and transfer characteristics of a Depletion type MOSFET. [7M]
   b. Describe the operation of common gate FET amplifier and derive the equation for voltage gain. [7M]

UNIT-V

9. a. Explain the working principle of a basic operational amplifier and outline its ideal characteristics. [7M]
   b. Interpret how an op-amp can be used as Integrator? Also derive expression for the output. [7M]

OR

10. a. Classify the various modes of operation of Differential amplifier. [7M]
    b. Outline the operation of a Non Inverting Amplifier with the help of a circuit diagram. [7M]