Subject Code: 24EC11RC10 **R-24** **Reg No:** | | | | | | | | | | | | |

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

(Affiliated to Andhra University, Visakhapatnam)

II B.Tech. - I Semester Regular Examinations, Nov – 2025

PULSE AND DIGITAL CIRCUITS

(ECE Branch)

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 the response of low pass RC circuit for a step input signal. **[7M]**
   b. How the low pass RC circuit acts as an integrator? **[7M]**

OR

2. a. What is the effect of time constant of an RC circuit on differentiated wave? Sketch the output waveform from the differentiating circuit when the input is square wave for T=0.2RC. **[7M]**
   b. What is an attenuator? How can an uncompensated attenuator modified as a compensated attenuator. Give the comparison between perfect compensation, under compensation and over compensation. **[7M]**

UNIT-II

3. a. State and prove clamping circuit theorem with suitable diagrams. **[7M]**
   b. With the help of a circuit diagram, explain the operation of positive clampers. **[7M]**

OR

4. a. Explain the function of a basic series clipper circuit. **[7M]**
   b. Discuss the operation of a two level slicer. **[7M]**

UNIT-III

5. a. Explain the switching times of the transistor. **[7M]**
   b. Design a bistable multivibrator to meet the following specifications: $V_{CC} = V_{BB} = 12$ V, $I_{C(sat)} = 6$ mA, $h_{FE(min)} = 25$, maximum trigger frequency = 25 kHz. **[7M]**

OR

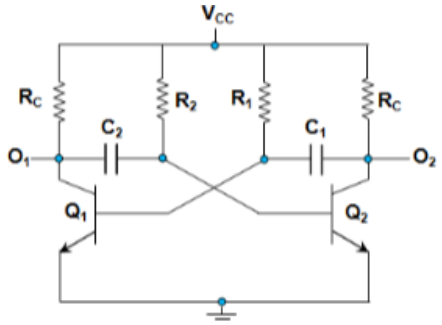
6. a. Explain the function of a Schmitt trigger circuit with suitable diagram. **[7M]**
   b. Explain the different triggering methods of binary circuits. **[7M]**

UNIT-IV

7. a. Explain the operation of collector coupled Monostable multivibrator. **[7M]**
   b. Explain how Astable Multivibrator acts as a voltage-to-frequency converter. **[7M]**

OR

8. a. For the astable multivibrator circuit shown in figure below, if $R_1 = 20K\Omega$, $R_2 = 10K\Omega$, $C_1 = 0.02\mu F$, $C_2 = 0.015\mu F$, find the frequency of oscillation and duty cycle of the output waveform. **[7M]**



b. Explain collector-coupled Astable Multivibrator **[7M]**

UNIT-V

9. a. With reference to voltage sweeps explain the following terms: i) Linearity of sweeps. ii) Sweep stability. iii) Recovery time. **[7M]**

   b. Explain the basic principles behind Bootstrap time base generator. **[7M]**

OR

10. a. Draw and explain the circuit diagrams of two input OR gate using Diode and RTL Logic styles. **[7M]**

    b. Show that $e_d = \frac{1}{8} e_s = \frac{1}{4} e_t$ for an exponential sweep generator. Where e_d = Displacement error e_s=Sweep Speed error, e_t=Transmission error. **[7M]**