Subject Code:24EC11RC14 **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

ANALOG AND DIGITAL CIRCUITS

(EEE)

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 working of two-level diode clipper with neat circuit diagram
   b. With neat diagram explain the working of transformer coupled transistor amplifier

OR

2. a. Explain the working of negative clamper circuit. Draw the required waveforms
   b. With the neat diagram explain the working of two-stage RC coupled amplifier

UNIT-II

3. a. With a neat block diagram explain the working of a voltage series feedback amplifier. Obtain the expression for gain, Input resistance and output resistance with feedback
   b. With the help of a circuit diagram and associated wave forms describe the working of basic triangular square wave generator using op-amps.

OR

4. a. Show that the bandwidth increases in negative feedback amplifiers.
   b. What are the different types of feedback amplifiers? Give their equivalent circuits

UNIT-III

5. a. Convert $(A0F9.0EB)_{16}$ to decimal, binary, octal.
   b. Simplify the following function using K-Map method
   $F(A,B,C,D) = \Sigma(0,1,2,3,4,6,9,10) + d(7,11,12,13,15)$

OR

6. a. Describe the operations performed by the following logic circuits with an example:
   (i) Full adder ii) Decoder (iii) Encoder.
   b. Design the 8:1 MUX for the given Boolean Expression $f=\Sigma m(1,3,4,11,12,13,14,15)$.

UNIT-IV

7. a. With the block diagram, Truth table, describe the principle operation of edge triggered negative JK flip flop.
   b. Draw the block diagram of 3-bit up counter & explain its operation with truth table.

OR

8. a. Draw and explain the operation of the Master Slave SR flip-flops with block diagram.
   b. With a neat diagram, explain the operation of bidirectional shift register.

UNIT-V

9. a. Explain the operation of binary weighted resistor DAC
   b. Draw and explain the operation of sample and hold circuits

OR

10. a. Draw and explain the functional diagram of the successive approximation ADC converter.
    b. Explain the operation of 2-bit DAC using R-2R circuit.