Subject Code: 24EC11RC06 **R-24** **Reg No:** | | | | | | | | | | | | |

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

ELECTRONIC CIRCUIT ANALYSIS

(ECE)

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. For CE transistor, draw the hybrid-π model, and explain about all the parameters involved. 7M
   b. Derive the β-cut-off frequency for CE amplifier at high frequencies. 7M

OR

2. a. State the Miller's theorem and derive the miller capacitance if a capacitor is connected between input and output. 7M
   b. Derive the voltage gain of CS FET amplifier at high frequencies. 7M

UNIT-II

3. a. For a two stage RC coupled CE amplifier derive overall current gain and input resistance. 7M
   b. What is the effect of bypass and coupling capacitors on low frequency response of CE amplifier? 7M

OR

4. a. Derive the overall bandwidth and gain for n-stage cascaded amplifier. 7M
   b. Derive the current and volage gains of basic Darlington circuit. 7M

UNIT-III

5. a. list out the characteristics of negative feedback amplifiers and derive the sensitivity. 7M
   b. Draw the block diagram for current series feedback amplifier and derive the expression for gain, input resistance and output resistance. 7M

OR

6. a. Explain about different sampling and mixing topologies used in negative feedback amplifier with neat sketches. 7M
   b. Derive the expression for gain, input resistance and output resistance for voltage shunt feedback amplifier. 7M

UNIT-IV

7. a. Draw the circuit diagram of FET based RC phase shift oscillator and derive the frequency of oscillations for this. 7M
   b. What is meant by frequency stability and discuss about this for crystal oscillators. 7M

OR

8. a. Derive the frequency of oscillations for Colpitts oscillator by deriving the general equation for LC oscillators. 7M
   b. Compare Hartley, Colpitts and Clapp oscillators. 7M

UNIT-V

9. a. Draw and explain the working of class-B complementary symmetry push-pull power amplifier. 7M
   b. Derive the efficiency of class-B power amplifier. 7M

OR

10. a. Explain the frequency response of stagger tuned amplifier using single tuned circuits. 7M.
    Derive the equation for bandwidth for single tuned amplifier. 7M