

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

(Affiliated to Andhra University, Visakhapatnam)

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

ELECTRONIC DEVICES AND CIRCUITS

(Electronics and Communication Engineering)

- All questions carry equal marks
- Must answer all parts of the question at one place

Time: 3Hrs.

Max Marks: 70

UNIT-I

- What is Hall effect? Outline the relation between mobility and hall coefficient? 7M
 - Define Fermi energy level, show that Fermi energy level for an intrinsic semiconductor lies in the middle of the forbidden energy band gap. 7M

(OR)

- Explain the energy band diagram of p-n junction diode under open circuit condition and derive the equation for contact potential. 7M
 - What do you mean by step graded and Grown junction? Explain the expression for diffusion capacitance with necessary equations. 7M

UNIT-II

- Draw and explain the Half wave rectifier with the help of wave forms 7M
 - A Full wave bridge rectifier has an input voltage of 240V ac rms. Assume diodes to be ideal and load resistance to be 10 K Ω . Calculate the
 - Peak, average and rms value of current and voltage
 - dc power output
 - ac power input
 - Efficiency of the rectifier
 - Ripple factor, TUF and PIV.
 - Form and peak factors

(OR)

- Compare Zener & Avalanche Breakdown mechanisms. 7M
 - Explain the operation of Tunnel diode with necessary graphs. 7M

UNIT-III

- Illustrate input and output characteristics of transistor in CB configuration with neat diagram and analyse the effect of Base width modulation. 7M
 - Define β , α , Y and derive the relation between them 7M

(OR)

- Draw and explain Fixed bias circuit and derive its Q point. 7M
 - Analyse the operating point of Self bias circuit with the help of circuit diagram. 7M

UNIT-IV

- State and explain the functionality of various elements of a CE Amplifier. 7M
 - Analyse Common collector Amplifier with the help of h parameters and Derive the expression for A_i , A_v , R_i and R_o . 7M

(OR)

8. a) Explain the frequency response of CE amplifier. 7M
b) Analyse Common Emitter Amplifier with the help of h parameters and Derive the expression for A_i , A_v , R_i and R_o . 7M

UNIT-V

9. a) Explain the operation and drain characteristics of n channel JFET. 7M
b) Draw and explain the small signal model of JFET Amplifier. 7M

(OR)

10. a) Explain the working and drain characteristics of depletion MOSFET. 7M
b) Explain the working and drain characteristics of enhancement MOSFET. 7M