



DISCIPLINE:- ELECTRONICS & TELECOMMUNICATION ENGINEERING	SEMESTER:- 3 rd	NAME OF THE TEACHING FACULTY: SUBRAT KUMAR GRAHACHARYA
SUBJECT TH:2- ELECTRONICS DEVICES	NO. OF DAYS/PER WEEK CLASS ALLOTTED:- 3	SEMESTER FROM DATE:- 14-07-2025 TO DATE :-15 - 11 -2025
Week	Class day	Theory
1 st	1 st	1.Introduction to Semiconductor Physics 1.1 Review of Quantum Mechanics 1.2 Electrons in periodic Lattices
	2 nd	1.3 Energy bands in intrinsic and extrinsic silicon
	3 rd	1.4 Carrier transport 1.4.1 Diffusion current 1.4.2 Drift current 1.4.3 Mobility and resistivity
2 nd	1 st	P-N Junction Diodes 2.1 Generation and recombination of carriers
	2 nd	2.2 Poisson and continuity equatio
	3 rd	2.3 P-N Junction Diodes 2.3.1 Construction of P-N Junction Diod
3 rd	1 st	2.3.2 Operating Principle
	2 nd	2.3.3 P-N junction characteristics
	3 rd	2.3.3 P-N junction characteristics
4 th	1 st	2.3.4 I-V characteristics
	2 nd	2.3.5 Small signal switching model
	3 rd	2.3.6 Avalanche breakdown
5 th	1 st	2.3.7 Zener diod
	2 nd	2.3.8 Schottky diode 2.3.9 LED 2.3.10 Photodiode and solar cel
	3 rd	Bipolar Junction Transistor (BJT) 3.1 Construction of BJT
6 th	1 st	3.2 Operating Principle of BJT 3.3 Types of BJT
	2 nd	3.4 Working principle of p-n-p and n-p-n BJT 3.5 I-V characteristics
	3 rd	3.6 Ebers Moll Model
7 th	1 st	3.7 Different types of transistor connection 3.7.1 Common Base (CB) 3.7.2 Common Emitter (CE) 3.7.3 Common Collector (CC)
	2 nd	3.8 Input and output characteristics of transistor in different connections 3.9 Define ALPHA, BETA and GAMMA of transistors in various
	3 rd	3.10 Establish the Mathematical relationship between ALPHA, BETA and GAMMA 3.11 Basic concept of Biasing
8 th	1 st	3.12 Types of Biasing 3.13 h-parameter model of BJT
	2 nd	3.14 Load line and determine the Q-point
	3 rd	3.15 Types of Coupling
9 th	1 st	3.16 Working principle and use of R-C Coupled Amplifier

	2 nd	3.17 Frequency Responses of R-C coupled Amplifier
	3 rd	FIELD EFFECT TRANSISTOR (FET)
		4.1 FET & its classifications
10 th	1 st	4.2 Differentiate between JFET & BJT
	2 nd	4.3 Construction, working principle & characteristics of JEFT
	3 rd	4.4 Parameters of JFET & establish relation among JFET parameters
11 th	1 st	4.5 Construction and working principle of MOSEFT
	2 nd	4.6 Classification of MOSEFT
	3 rd	4.7 Characteristics (Drain & Transfer) of MOSEF
12 th	1 st	4.8 Explain the operation of CMOS, VMOS & LDMOS.
	2 nd	FEED BACK AMPLIFIER & OSCILLATOR
	3 rd	5.1 Define & classify Feedback Amplifier
13 th	1 st	5.2 Types of feedback – negative & positive feedback.
	2 nd	5.3 Characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise and distortion in amplifiers.
	3 rd	5.4 Oscillator
14 th	1 st	5.4.1 Block diagram of sine wave oscillator
	2 nd	5.4.2 Types Requirement of oscillation
	3 rd	5.4.3 Barkhausen criterion
15 th	1 st	5.5 LC oscillators
	2 nd	5.5.1 Colpitts Oscillators
	3 rd	5.5.2 Hartley Oscillators
	1 st	5.5.3 Wien Bridge Oscillators
	2 nd	Integrated Circuit Fabrication Process
	3 rd	6.1 Oxidation
	1 st	6.2 Diffusion
	2 nd	6.3 Ion implantation
	3 rd	6.4 Photo-lithography
	1 st	6.5 Etching
	2 nd	6.6 Chemical vapor deposition
	3 rd	6.7 Sputtering
		6.8 Twin-tub CMOS process

Signature of faculty

Signature of sr lecturer
Head of Dept. (HOD)
Electrical & ETC
G. I. E. T (POLY), ...

Signature of principal