



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

ACADEMIC LESSON PLAN FOR WINTER SEMESTER - 2025
DEPT. OF ELECTRONICS & TELECOMMUNICATION, GOVT. POLYTECHNIC, BALASORE
NAME OF THE FACULTY: ER. LIPIKA SANDHA (LECT. STAGE -I, E & TC)
TH2: - ELECTRONICS DEVICES

DISCIPLINE: ELECTRONICS & TELECOMMUNICATION ENGINEERING	SEMESTER: 3 RD	NAME OF THE TEACHING FACULTY: ER. LIPIKA SANDHA (LECT. STAGE -I)
SUBJECT: TH2: - ELECTRONICS DEVICES	NO. OF DAYS/PER WEEK CLASS ALLOTTED: 3	SEMESTER FROM DATE: 14 TH , JULY 2025 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 ST	1 ST	Introduction to Semiconductor Physics 1.1 Review of Quantum Mechanics 1.2 Electrons in periodic Lattices
	2 ND	1.2 Energy bands in intrinsic and extrinsic silicon 1.4 Carrier transport
	3 RD	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 2.2 Poisson and continuity equation
	2 ND	2.3 P-N Junction Diodes
	3 RD	2.3.1 Construction of P-N Junction Diode
3 RD	1 ST	2.3.2 Operating Principle
	2 ND	2.3.3 P-N junction characteristics
	3 RD	2.3.4 I-V characteristics
4 TH	1 ST	2.3.5 Small signal switching models
	2 ND	2.3.6 Avalanche breakdown
	3 RD	2.3.7 Zener diode 2.3.8 Schottky diode
5 TH	1 ST	2.3.9 LED 2.3.10 Photodiode and solar cell
	2 ND	Bipolar Junction Transistor (BJT) 3.1 Construction of BJT
	3 RD	3.2 Operating Principle of BJT 3.3 Types of BJT
6 TH	1 ST	3.4 Working principle of p-n-p and n-p-n BJT 3.5 I-V characteristics
	2 ND	3.6 Ebers Moll Model

	3 RD	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)
7 TH	1 ST	3.8 Input and output characteristics of transistor in different connections 3.9 Define ALPHA, BETA and GAMMA of transistors in various modes.
	2 ND	3.10 Establish the Mathematical relationship between ALPHA, BETA and GAMMA
	3 RD	3.11 Basic concept of Biasing 3.12 Types of Biasing 3.13 h-parameter model of BJT
8 TH	1 ST	3.14 Load line and determine the Q-point.
	2 ND	3.15 Types of Coupling
	3 RD	3.16 Working principle and use of R-C Coupled Amplifier
9 TH	1 ST	3.17 Frequency Responses of R-C coupled Amplifier
	2 ND	FIELD EFFECT TRANSISTOR (FET) 4.1 FET & its classifications
10 TH	3 RD	4.2 Differentiate between JFET & BJT
	1 ST	4.3 Construction, working principle & characteristics of JEFT ;
	2 ND	4.4 Parameters of JFET & establish relation among JFET parameters 4.5 JEFT as an amplifier
11 TH	3 RD	4.5 Construction and working principle of MOSEFT
	1 ST	4.6 Classification of MOSEFT
	2 ND	4.7 Characteristics (Drain & Transfer) of MOSEFT
12 TH	3 RD	4.8 Explain the operation of CMOS, VMOS & LDMOS.
	1 ST	FEED BACK AMPLIFIER & OSCILLATOR 5.1 Define & classify Feedback Amplifier 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.
13 TH	3 RD	5.4 Oscillator
	1 ST	5.4.1 Block diagram of sine wave oscillator
	2 ND	5.4.2 Types Requirement of oscillation
14 th	3 RD	5.4.3 Barkhausen criterion
	1 ST	5.5 LC oscillators 5.5.1 Colpitts Oscillators
	2 ND	5.5.2 Hartley Oscillators
15 TH	3 RD	5.5.3 Wien Bridge Oscillators
	1 ST	Integrated Circuit Fabrication Process 6.1 Oxidation 6.2 Diffusion 6.3 Ion implantation
	2 ND	6.4 Photo-lithography 6.5 Etching 6.7 Chemical vapor deposition
	3 RD	6.8 Sputtering 6.9 Twin-tub CMOS process

Liping Sandha
08/07/2025
Faculty

Liping Sandha, Lect. (Stage-1)
(E&TC)

H.S.M.M.
H.O.D 08/07/25