



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

ACADEMIC LESSON PLAN FOR WINTER SEMESTER - 2026

DEPT. OF ELECTRONICS & TELECOMMUNICATION, GOVT. POLYTECHNIC, BALASORE

NAME OF THE FACULTY: ER. LIPIKA SANDHA (LECT. STAGE -I, E & TC)

SUBJECT: TH2- ELECTRONICS DEVICES

DISCIPLINE: ELECTRONICS & TELECOMMUNICATION ENGINEERING	SEMESTER: 3 RD	NAME OF THE TEACHING FACULTY: ER. LIPIKA SANDHA (LECT. STAGE -I)
SUBJECT: TH:2- ELECTRONICS DEVICES	NO. OF DAYS/PER WEEK CLASS ALLOTTED: 3	SEMESTER FROM DATE: 1 ST JULY 2026 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 ST	1 ST	Introduction to Semiconductor Physics (3) 1.1 Review of Quantum Mechanics
	2 ND	1.2 Electrons in periodic Lattices 1.3 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 (10) 2.1 Generation and recombination of carriers
	2 ND	2.2 Poisson and continuity equation
	3 RD	2.3 P-N Junction Diodes 2.3.1 Construction of P-N Junction Diode
3 RD	1 ST	2.3.2 Operating Principle 2.3.3 P-N junction characteristics
	2 ND	2.3.4 I-V characteristics
	3 RD	2.3.5 Small signal switching models
4 TH	1 ST	2.3.6 Avalanche breakdown
	2 ND	2.3.7 Zener diode
	3 RD	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) (12) 3.1 Construction of BJT 3.2 Operating Principle of BJT
	3 RD	3.3 Types of BJT 3.4 Working principle of p-n-p and n-p-n BJT 3.5 I-V characteristics

6 TH	1 ST	3.6 Ebers Moll Model 3.7 Different types of transistor connection
	2 ND	3.7.1 Common Base (CB) 3.7.2 Common Emitter (CE) 3.7.3 Common Collector (CC)
	3 RD	3.8 Input and output characteristics of transistor in different connections
7 TH	1 ST	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
8 TH	1 ST	3.13 h-parameter model of BJT 3.14 Load line and determine the Q-point.
	2 ND	3.15 Types of Coupling 3.16 Working principle and use of R-C Coupled Amplifier
	3 RD	3.17 Frequency Responses of R-C coupled Amplifier
9 TH	1 ST	2.4 Fabrication of fibers and measurement techniques like OTDR
	2 ND	FIELD EFFECT TRANSISTOR (FET) (8) 4.1 FET & its classifications 4.2 Differentiate between JFET & BJT
	3 RD	4.3 Construction, working principle & characteristics of JEFT
10 TH	1 ST	4.4 Parameters of JFET & establish relation among JFET parameters
	2 ND	4.5 JEFT as an amplifier
	3 RD	4.5 Construction and working principle of MOSEFT
11 TH	1 ST	4.6 Classification of MOSEFT
	2 ND	4.7 Characteristics (Drain & Transfer) of MOSEFT
	3 RD	4.8 Explain the operation of CMOS, VMOS & LDMOS.
12 TH	1 ST	FEED BACK AMPLIFIER & OSCILLATOR (9) 5.1 Define & classify Feedback Amplifier
	2 ND	5.2 Types of feedback – negative & positive feedback.
	3 RD	5.3 Characteristics voltage gain, bandwidth, input Impedance output impedance, stability, noise and distortion in amplifiers.
13 TH	1 ST	5.4 Oscillator 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
14 th	1 ST	5.5 LC oscillators 5.5.1 Colpitts Oscillators
	2 ND	5.5.2 Hartley Oscillators
	3 RD	5.5.3 Wien Bridge Oscillators
15 TH	1 ST	Integrated Circuit Fabrication Process (3) 6.1 Oxidation 6.2 Diffusion
	2 ND	6.3 Ion implantation 6.4 Photo-lithography 6.5 Etching
	3 RD	6.7 Chemical vapor deposition 6.8 Sputtering 6.9 Twin-tub CMOS process

[Signature]
23/06/2024
Faculty

[Signature]
23/06/2024
H.O.D