DEPARTMENT OF ELECTRICAL ENGINEERING Govt. Polytechnic Jajpur, Ragadi

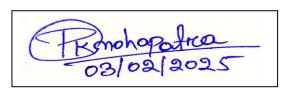
LESSON PLAN {SESSION 2024-25 (SUMMER) TH2. ANALOG ELECTRONICS AND OP-AMP

Course Code: TH-2	Semester: 4 TH
Total Periods: 60	Examination: 3 Hours
Theory Periods: 4 P/Week	Internal Assessment: 20 Marks
Maximum Marks: 100	End Semester Examination: 80 Marks
Semester From Date: 04/02/2025 To 17/05/2025	Name Of Teaching Faculty: Sri. Prasanta Kumar Mohapatra

		TOPICS TO BE COVERED			
	1	P-N Junction Diode, Working of Diode, V-I characteristic of PN junction Diode			
1 st	2	DC load line Important terms such as Ideal Diode, Knee voltage, Junctions breakdown,			
Week	3	Zener breakdown, Avalanche breakdown,			
	4	P-N Diode clipping Circuit			
	5	P-N Diode clipping Circuit			
		P-N Diode clamping Circuit			
	6	P-N Diode clamping Circuit			
2 nd		Special Semiconductor Device: Thermistors,			
Week	7	Sensors & Barretters			
	8	Zener Diode			
	9	Zener Diode			
	10	PIN Diode, Tunnel Diode			
3 rd		Rectifier Circuit & Filters: Classification of rectifiers			
Week	11	Classification of rectifiers, Analysis of half wave, full wave centre tapped and Bridge rectifiers			
_	12	Analysis of half wave rectifiers and calculate dc output current and voltage, RMS			
		output current and voltage, Rectifier efficiency			
	13	Analysis of half wave rectifiers and calculate Ripple factor, Regulation, Transformer			
		utilization factor, Peak inverse voltage			
	14	Full wave centre tapped and Bridge rectifiers and calculate: DC output current and			
4 th		voltage, RMS output current and voltage, Rectifier efficiency			
Week	15	Full wave centre tapped and Bridge rectifiers and calculate: Ripple factor,			
		Regulation, Transformer utilization factor, Peak inverse voltage			
	16	Filters: Shunt capacitor filter, Choke input filter, π filter			
	17	Transistors: Principle of Bipolar junction transistor, Different modes of operation of			
		transistor Current components in a transistor,			
	18	Principle of Bipolar junction transistor, Different modes of operation of transistor			

5 th		Current components in a transistor,			
Week	19	Transistor as an amplifier			
	20	Transistor circuit configuration & its characteristics, CBC on figuration, CEC on figuration, CCC on figuration			
	21	Transistor circuit configuration & its characteristics, CBC on figuration, CEC on figuration, CCC on figuration			
6 th Week	22	Transistor circuits: Transistor biasing, Stabilization, Stability factor			
week	23	Transistor biasing, Stabilization, Stability factor			
	24	Different method of Transistors Biasing, Base resistor method, Collector to base bias			
	25	Different method of Transistors Biasing, Base resistor method, Collector to base bias			
	26	Self-bias or voltage divider method			
7 th Week	27	Transistor Amplifier & Oscillators: Practical circuit of transistor amplifier DC load line and DC equivalent circuit, AC load line and AC equivalent circuit			
	28	Practical circuit of transistor amplifier DC load line and DC equivalent circuit, AC load line and AC equivalent circuit			
	29	Calculation of gain, Phase reversal			
.,	30	H-parameters of transistors, Simplified H- parameters of transistors			
8 th	31	Generalized approximate model, Analysis of CB amplifier			
Week	32	Generalized approximate model, Analysis of CE, amplifier using generalized approximate model			
	33	Generalized approximate model, Analysis of CC, amplifier using generalized approximate model Multistage transistor amplifier, R.C. coupled amplifier, Transformer coupled amplifier			
9 th	34	Feedback in amplifier, General theory of feedback			
Week	35	Negative feedback circuit, Advantage of negative feedback			
	36	Power amplifier and its classification Difference between voltage amplifier and power amplifier			
	37	Transformer coupled class A power amplifier			
10 th	38	Class A push–pull amplifier, Class B push–pull amplifier			
Week	39	Oscillators, Types of oscillators, Essentials of transistor oscillator Principle of operation of tuned collector,			
	40	Hartley, colpitt,			
	41	Phase shift, Wein-bridge oscillator (no mathematical derivations)			
11 th Week	42	Field Effect Transistor: Classification of FET, Advantages of FET over BJT, Principle of operation of BJT			
	43	Classification of FET, Classification of BJT			
	44	FET parameters (no mathematical derivation), DC drain resistance, AC drain resistance, Trans-conductance			
	45	Biasing of FET			

	46	Biasing of FET		
12 th Week	47	Operational amplifier: General circuit simple of OP-AMP and IC-CA-741OPAMP, Operational amplifier stages		
	48	Equivalent circuit of operational amplifier		
		Open-loop OP-AMP configuration		
13 th Week	49	OPAMP with feedback, Inverting OP-AMP		
	50	Non inverting OP-AMP		
	51	Voltage follower & buffer,		
	52	Differential amplifier		
14 th Week	53	Adder or summing amplifier		
	54	Subtractor, Integrator,		
	55	Differentiator, Comparator		
	56	Revision		
15 th Week	57	Revision		
	58	QUESTION AND ANSWER DISCUSSION		
	59	QUESTION AND ANSWER DISCUSSION		
	60	QUESTION AND ANSWER DISCUSSION		



Sl. No	Name of Authors	Title of the Book	Name of the publisher
1	Sanjeev Gupta	Electronic Devices and Circuits	Dhanpat Rai Publications
2	R.S Sedha	Electronics Circuit	S. CHAND