

**SYNERGY POLYTECHNIC, BBSR**

**The Lesson Plan**

Discipline:EE		Semester:4th	Name of the Teaching Faculty: Saswati sanghamitra Pradhan
Subject:Analog Electronics and Op-amp		No of Days/per week class allotted:4	Semester from Date: 16/1/24 to Date: 26/4/24 No of Weeks: 15
Week	Class Day	Theory/Practical Topics	
1st	1st	1.1)P-N Junction Diode 1 .2) Working of Diode 1 .3) V-I characteristic of PN junction Diode. 1 . 4) DC load line	
	2nd	Important terms such as Ideal Diode, Knee voltage Junctions break down. 1.6	
	3rd	1.6.1 Zener breakdown 1.6.2 Avalanche breakdown	
	4th	1 . 7 P-N Diode clipping Circuit.	
	5th	1 . 8 P-N Diode clamping Circuit <i>Problem</i>	
2nd	1st	2 . 1 Thermistors, Sensors & barretters	
	2nd	2 . 2 Zener Diode,2 . 3 Tunnel Diode,2 . 4 PIN Diode	
	3rd	Classification of rectifiers	
	4th	Analysis of half wave 1)DC output current and voltage 2)RMS output current and voltage	
	5th	<i>Problem</i>	
3rd	1st	3.2.3 Rectifier efficiency 3.2.4 Ripple factor 3.2.5 Regulation	
	2nd	3.2.6 Transformer utilization factor 3.2.7 Peak inverse voltage	
	3rd	Analysis of full wave centre tapped and Bridge rectifiers 3.2.1 DC output current and voltage 3.2.2 RMS output current and voltage 3.2.3 Rectifier efficiency	
	4th	3.2.4 Ripple factor 3.2.5 Regulation 3.2.6 Transformer utilization factor 3.2.7 Peak inverse voltage	
	5th	<i>Problem</i>	
4th	1st	3.3 Filters: 3.3.1 Shunt capacitor filter	
	2nd	3.3.2 Choke input filter	
	3rd	3.3.3 $\pi$ filter	
	4th	4.1 Principle of Bipolar junction transistor	
	5th	<i>Problem</i>	
5th	1st	4.2 Different modes of operation of transistor	
	2nd	4.3 Current components in a transistor	
	3rd	4.4 Transistor as an amplifier	
	4th	4.5 Transistor circuit configuration & its characteristics	
	5th	<i>Problem</i>	

*S.S. Pradhan*  
Sign of Faculty

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*S. Pradhan*  
16/1/24  
Principal

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Discipline:EE	Semester:	Name of the Teaching Faculty:Saswati sanghamitra Pradhan
Subject:Analog Electronics and Op-amp	No of Days/per week class allotted:4	Semester from Date: 16/01/2024 to Date: 26/04/2024 No of Weeks: 15
Week	Class Day	Theory/Practical Topics
6th	1st	4.5.1 CB Configuration
	2nd	4.5.2 CE Configuration
	3rd	4.5.3 CC Configuration
	4th	5.1 Transistor biasing
	5th	Problem
7th	1st	5.2 Stabilization 5.3 Stability factor
	2nd	5.4 Different method of Transistors Biasing , 5.4.1 Base resistor method
	3rd	5.4.2 Collector to base bias
	4th	5.4.3 Self bias or voltage divider method
	5th	Problem
8th	1st	6.1 Practical circuit of transistor amplifier
	2nd	6.2 DC load line and DC equivalent circuit
	3rd	6.3 AC load line and AC equivalent circuit
	4th	6.4 Calculation of gain
	5th	Problem
9th	1st	6.5 Phase reversal
	2nd	6.6 H-parameters of transistors
	3rd	6.7 Simplified H-parameters of transistors
	4th	6.8 Generalised approximate model
	5th	Problem
10th	1st	6.9 Analysis of CB, CE, CC amplifier using generalised approximate model
	2nd	6.10 Multi stage transistor amplifier
	3rd	6.10.1 R.C. coupled amplifier 6.10.2 Transformer coupled amplifier
	4th	6.11 Feed back in amplifier 6.11.1 General theory of feed back 6.11.2 Negative feedback circuit
	5th	Problem

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Week	Class Day	Theory/Practical Topics			
11th	1st	6.12 Power amplifier and its classification			
	2nd	6.12.1 Difference between voltage amplifier and power amplifier			
	3rd	6.12.2 Transformer coupled class A power amplifier			
	4th	6.12.3 Class A push – pull amplifier			
	5th	6.12.4 Class B push – pull amplifier			
12th	1st	6.13 Oscillators			
	2nd	6.13.1 Types of oscillators			
	3rd	6.13.2 Essentials of transistor oscillator			
	4th	6.13.3 Principle of operation of tuned collector, Hartley, colpitt, phase shift, weinbridge oscillator (no mathematical derivations)			
	5th	7.1 Classification of FET			
13th	1st	7.2 Advantages of FET over BJT			
	2nd	7.3 Principle of operation of BJT			
	3rd	7.4 FET parameters (no mathematical derivation)			
	4th	7.4.1 DC			
	5th	7.4.2 AC			
14th	1st	7.4.3			
	2nd	Trans-conductance			
	3rd	7.5 Biasing of FET			
	4th	8.1 General circuit simple of OP-AMP and IC – CA – 741 OP AMP			
	5th	8.2 Operational amplifier stages			
15th	1st	Equivalent circuit of operational amplifier			
	2nd	8.3			
	3rd	8.4 Open loop OP-AMP configuration			
	4th	8.5			
	5th	8.6 Inverting OP-AMP			
16th	1st	8.7			
	2nd	8.8 Voltage follower & buffer			
	3rd	8.9 Differential amplifier			
	4th	8.9.1 Adder or summing amplifier			
	5th	8.9.2 Sub tractor			
17th	1st	8.9.3 Integrator			
	2nd	8.9.4 Differentiator			
	3rd	8.9.5 Comparator			
	4th	Problem			
	5th	Revision			
18th	1st	Revision			
	2nd	Revision			
	3rd	Revision			
	4th	Revision			
	5th	Problem			

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