

Discipline:	ELECTRICAL	Semester: 4 th	Name of the Teaching Faculty: Rudra prasad Nanda	
Subject: Analog Electronics & OP-AMP	No of Days/Week Class Allotted: 05	Semester From date: 13.02.23 To date 23.05.23	No. of Weeks: 13	


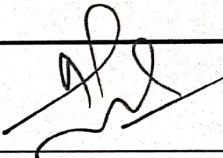
WEEK	Class Day	Theory Topics
01	1st	Working principle of Diode and its current equation, specification and use of p-n junction diode.
	2nd	Breakdown of diode (Avalanche & Zener breakdown) and construction, working, characteristics, working of half wave rectifier
	3rd	Working of full wave rectifier
	4th	Working of NPN & PNP transistor and different type of transistor connection
	5th	Input output characteristics of transistor for different connection. Define ALPHA, BETA, GAMMA and derive relationship between them.
02	1st	Basic concept of biasing and types of biasing
	2nd	h-parameter model of BJT, Load line analysis and determine the Q-point.
	3rd	Types of coupling, working principle and use of RC coupled amplifier.
	4th	Frequency response of RC coupled amplifier and draw the curve
	5th	Classify power amplifier and differentiate between voltage and power amplifier
03	1st	Working principle of class A & class B power amplifier.
	2nd	Working principle of class AB, class C & class D power amplifier
	3rd	Construction, working principle & advantage of Push-Pull (class B) amplifier.
	4th	FET, its classification and differentiate between FET & BJT
	5th	Construction, working principle and characteristics of JFET.

WEEK	Class Day	Theory Topics
04	1st	Explain JFET as an amplifier
	2nd	Parameters of JFET & Establish relation among JFET parameter.
	3rd	Construction, working principle of MOSFET & its classification
	4th	Characteristics (Drain and Transfer) MOSFET
	5th	Explain operation of CMOS.
05	1st	Define and classify feedback amplifier, principle of negative feedback and types of feedback
	2nd	Types of negative feedback voltage shunt and voltage series.
	3rd	Current shunt and current series
	4th	Oscillator block-diagram, types of requirement and Barkhausen Criterion
	5th	RC phase shift oscillator
06	1st	Crystal oscillator
	2nd	LC oscillator (Hartley & Colpitts) Wien Bridge oscillator
	3rd	Define and classify tuned amplifier
	4th	Explain parallel resonance circuit, Resonance curve and sharpness of resonance
	5th	Working principle of single tuned voltage amplifier & its limitation

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WEEK	Class Day	Theory Topics		
07	1st	Working principle of double tuned voltage amplifier and its limitation		
	2nd	Different type of non-linear circuit, Clipper (series diode), Shunt clipper		
	3rd	Combinational clipper circuit and its application		
	4th	Different type of clamper circuit (positive & negative) its application		
	5th	Working of astable multivibrator		
08	1st	Working of mono and bistable multivibrator		
	2nd	Working of integrator circuit using RC circuit and its use, working of differentiator circuit using RC circuit		
	3rd	CLASS TEST		
	4th	Differential amplifier, explain its configuration and its significance.		
	5th	1) Block diagram representation of OPAMP 2) Equivalent circuit of OPAMP and draw schematic symbol.		
09	1st	Discuss the types of integrated circuits manufacturers designations of ICs, Package type, Pin identification.		
	2nd	Define the following electrical characteristics input offset voltage and input offset current.		
	3rd	Define CMRR and slew rate		
	4th	Draw and explain open loop configuration of inverting amplifier		
	5th	Draw the circuit diagram of the voltage series feedback amplifier and derive the close loop voltage gain		

WEEK	Class Day	Theory Topics
10	1st	Gain of feedback circuits input resistance, and output resistance, bandwidth and total output offset voltage with feedback
	2nd	Draw the circuit diagram of the voltage shunt feedback amp & derive the close loop, voltage gain, gain of feedback circuits & input resistance, op resistance, bandwidth, total offset voltage.
	3rd	Discuss the summing scaling and averaging of inverting amplifier, discuss the summing scaling & averaging of non-inverting amplifier.
	4th	DC and AC amplifiers using OPAMP.
	5th	Integrator using OPAMP
11	1st	Differentiator using OPAMP
	2nd	Active filter and describe the filter design of first order low pass Butterworth.
	3rd	Concept of Zero crossing detector using OPAMP.
	4th	Block diagram and operation of IC 555 timer
	5th	IC 565 PLL & its application
12	1st	Working of current to voltage converter using operational Amplifier.
	2nd	Working of the voltage to Frequency converter using operational Amplifier.
	3rd	Working of the frequency to voltage conversion using operational amplifier.
	4th	Operation of power supply using 78XX and 79XX, LM317 Series with their PIN configuration
	5th	Functional block diagram and working of IC regulator LM723 and LM317.

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WEEK	Class Day	Theory Topics		
13	1st	Numericals Solved		
	2nd	CLASS TEST - II		
	3rd	MCQ TEST		
	4th	Previous Semester Question discussion		
	5th			
	1st	 		
	2nd			
	3rd			
	4th			
	5th			
	1st			
	2nd			
	3rd			
	4th			
	5th			