

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Discipline: Diploma	Semester: - <u>VI</u>	Name of the Teaching Faculty <u>Hetanjali Bhuyan</u>
Subject: <u>Analog Electronics</u> <u>Electronics TC</u>	No. of days per week Class Allotted:	Semester from Dt. <u>14/02/23</u> to Dt. <u>23/05/23</u> No. of Weeks: <u>15</u>
Week	Class Day	Theory / Practical Topics
1st Week	1st day	Unit 1 - Diode, Transistors, and circuit. (1) Working principle of Diode & its current equation, Specification and use of PN junction diode.
	2nd day	(2) Breakdown of diode and construction, working characteristics.
	3rd day	(3) Classification of Rectifiers and working of different types of Rectifiers - Half-wave Rectifier, Full-wave Rectifier (CT & Bridge type)
	4th day	
2nd Week	1st day	(4) Working principle of PNP and NPN transistor, different types of transistor connection (CB, CE, and CC) & input and output characteristics of transistor in different connections
	2nd day	(5) Define Alpha, Beta, and Gamma of transistors in various modes.
	3rd day	Establish the mathematical relationship between them.
	4th day	(6) Basic concept of Biasing.
	5th day	Types of Biasing - h-parameters model model of BJT, Load line, (AC & DC) and determine the Q-point.

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
3rd Week		<u>Unit-2</u>
		Audible Power Amplifiers:-
	1st day	(1) Classify Power Amplifiers and Differentiate between voltage and Power Amplifiers.
	2nd day	(2) Working Principle of different types of Power Amplifiers (Class A, class AB, class-B) and
	3rd day	Class C, & class D amplifiers.
4th Week	4th day	(3) Construction and working principle and advantages of Push-Pull (Class-B) amplifiers.
		<u>Unit-3</u>
	5th day	Field Effect Transistor (FET)
		(1) FET & its classification & Differentiate between JFET & MOSFET.
	1st day	(2) Construction, Working Principle and characteristics of JFET and Explain JFET as an amplifier, parameters of JFET and Establish relation among JFET parameters.
	2nd day	(3) Construction and working principle MOSFET and its classification & Characteristics (Drain & Transfer)
	3rd day	(4) Explain the operation of CMOS, VMOS, & LDMOS.
	4th day	

DHABALESWAR INSTITUTE OF POLYTECHNI

LESSON PLAN

Week	Class Day	Theory / Practical Topics
5th Week		<u>Unit - 4</u>
	1st day	Feedback amplifiers. & Oscillators (1) Define and classify feedback amplifiers, Principle of negative feedback with the help of block diagram. Types of feedback - negative and Positive feedback
	2nd day	
	3rd day	(2) Types of negative feedback voltage shunt, voltage series current shunts & current series and characteristics voltage gain, band width, input impedance, output impedance, stability, noise, distortion in amplifiers.
	4th day	
6th Week	5th day	(3) Oscillator, block diagram of sine wave oscillator, Types Requirement of oscillation, Barkhausen criterion.
	1st day	(4) RC oscillators - RC phase shift, crystal, LC oscillators - Colpitts, Hartley & Wien Bridge Oscillators, Circuit operation, circuit diagram, equation for frequency of oscillation and frequency stability.
	2nd day	
	3rd day	<u>Unit - 5</u>
	4th day	Tuned Amplifier and Wave shaping circuit. (1) Define and classify Tuned amplifiers. Explain Parallel Resonant circuit, Resonance curve & sharpness of Resonance.

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
7th Week	5th day	(2) Working principle of single tuned voltage & Double tuned amplifiers and its limitation.
	1st day	(3) Different type of Non linear circuits - clipper, diode series and shunt, Positive & negative biased and unbiased and combinational clipper clippers circuit & its application.
	2nd day	
	3rd day	(4) Different type of clamper circuit (Positive & negative clampers) & its application.
	4th day	(5) Working of Astable, Monostable & Bistable Multivibrator with circuit diagram.
	5th day	
8th Week		(6) Working use of integrator and Differentiator circuit using R-C circuit (linear) input / output waveforms & frequency response.
		Unit-6
	1st day	Operational Amplifier Circuits & Feedback Configurations.
	2nd day	(1) Differential amplifiers and explain its configuration and significance.
	3rd day	(2) Block diagram representation of a typical op-amp - its equivalent circuits and draw the schematic symbol.
	4th day	(3) Discuss the types of integrated circuit manufacturers, designations of ICs. Package types

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
9th Week	5th day	Pin identification and temperature and ordering information.
	1st day	(4) Derive the following electrical characteristics input offset voltage, input offset current, CMRR, Large signal voltage gain, Slew rate.
	2nd day	
	3rd day	(5) Draw and explain the open loop configuration (inverting-non inverting Amplifier)
	4th day	(6) Draw the circuit diagram of the voltage series feedback amplifier and derive the close loop voltage gain, gain of feed back circuits input resistance, and output resistance bandwidth and total output offset voltage with feed back.
10th Week	5th day	
	1st day	(7) Draw the circuit diagram of the voltage shunt feedback amplifier and derive the close loop, voltage gain, gain of feed back circuits and input resistance, and output resistance, bandwidth and total output offset voltage with feed back.
	2nd day	
	3rd day	

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
		<u>Unit - 7</u>
11th Week	1st day	Application of operational Amplifier Timer circuits & IC voltage regulator
	2nd day	1: → Discuss the summing, scaling, averaging of inverting and non-inverting amplifiers
	3rd day	2: → DC & AC Amplifiers using op-amp
	4th day	3: → Integrator and differentiator using OP-amp.
12th Week	1st day	4: → Active filter and describe filter design of first order low pass Butterworth
	2nd day	
	3rd day	5: → Concept of zero-crossing detector using OP-Amp
	4th day	6: → Block diagram and operation of IC 555 timer & IC 565 PLL and its applications.
13th Week	1st day	
	2nd day	7: → Working of current to voltage converter using op-amp
	3rd day	8: → Working of the voltage to current converter using op-amp.
	4th day	
14th Week	1st day	9: → Working of the Frequency to voltage conversion using op-amp
	2nd day	10: → Operation of power regulator using 78xx and 79xx LM317 Series with their Pin configuration
	3rd day	
	4th day	11: → Functional block diagram & working of IC regulator

LM723 & LM317