



# KIIT POLYTECHNIC, BHUBANESWAR

## LESSON PLAN

### Session (2023-2024)

<b>Discipline:</b> Electronics & Telecommunication Engineering	<b>Semester:</b> 4 <sup>th</sup> , Summer/2024	<b>Name of the Teaching Faculty:</b> MR JIBAN KUMAR JENA  <b>Email ID:</b> jiban.jenafet@kp.kiit.ac.in
<b>Subject:</b> AE&LI  <b>Theory: 4</b>	<b>No. Of Days/Week Class</b>  <b>Allotted: 5</b>	<b>Semester From Date:</b> 29/01/2024 To Date:14/05/2024  <b>No. Of Weeks:</b> 15 weeks
<b>Week</b>	<b>Class Day</b>	<b>Theory/Practical Topics</b>
1st	1st	Working principle, of Diode & its current equation, Specification and use of p-n junction diode.
	2nd	Breakdown of diode (Avalanche & Zener Breakdown) and construction, working, characteristics
	3rd	Classification of Rectifiers and working of different types of Rectifiers-Half-Wave Rectifier.
	4th	Full-wave Rectifier (Centre Tapped & BRIDGE type)
	5th	Working principle of p-n-p and n-p-n transistor, different types of transistor connection (CB, CE and CC).
2nd	1st	Input and characteristics of transistor in different connections. Define ALPHA, BETA and GAMMA of transistors in various modes

	2nd	Establish the mathematical relationship between them.
	3rd	Basing concept of biasing, Types of Biasing, h-parameter model of BJT, load line (AC &DC) and determine the Q-point.
	4th	Types of coupling, working principle and use of R-C coupled Amplifier & Frequency Responses of R-C coupled Amplifier & draw the curve.
	5th	Classify power Amplifier & Differentiate between Voltage and Power Amplifier.
3rd	1st	REVISION
	2nd	Working principle of different types of Power Amplifier (Class-A, CLASS-AB, CLASS-B Amplifier)
	3 <sup>rd</sup>	Working principle of different types of Power Amplifier (and CLASS-C & CLASS-D Amplifier).
	4 <sup>th</sup>	Construction and working principle and advantages of Push Pull (Class-B) Amplifier.
	5 <sup>th</sup>	FET & its classification
4th	1 <sup>st</sup>	Differentiate between JFET & BJT.
	2 <sup>nd</sup>	QUIZE
	3 <sup>rd</sup>	Construction, working principle & characteristics of JFET
	4 <sup>th</sup>	Explain JFET as an amplifier, parameters of JFET
	5 <sup>th</sup>	Establish relation among JFET parameters.
5th	1 <sup>st</sup>	Construction & Working principle MOSFET & its classification & characteristics (Drain & Transfer)
	2 <sup>nd</sup>	Explain the operation of CMOS, VMOS & LDMOS

	3 <sup>rd</sup>	Define & classify Feedback Amplifier
	4 <sup>th</sup>	Types of feedback – negative & positive feedback.
	5 <sup>th</sup>	Principle of negative feedback with the help of block diagram
6 <sup>th</sup>	1 <sup>st</sup>	Types of negative feedback – voltage shunt, voltage series, current shunt & current series and characteristics voltage gain, bandwidth, input impedance output impedance, stability, noise, distortion in amplifiers.
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	ASSIGNMENT CHECK
	4 <sup>th</sup>	Oscillator – block diagram of sine wave Oscillator,
	5 <sup>th</sup>	Types Requirement of Oscillation – Barkhausen criterion.
7 <sup>th</sup>	1 <sup>st</sup>	RC oscillator – RC phase shift Oscillator: circuit operation, circuit diagram, equation or frequency of oscillation & frequency stability.
	2 <sup>nd</sup>	Crystal Oscillator: circuit operation, circuit diagram, equation or frequency of oscillation & frequency stability.
	3 <sup>rd</sup>	LC Oscillator: circuit operation, circuit diagram, equation or frequency of oscillation & frequency stability.
	4 <sup>th</sup>	Colpitts Oscillator: circuit operation, circuit diagram, equation or frequency of oscillation & frequency stability.
	5 <sup>th</sup>	Hartley Oscillator: circuit operation, circuit diagram, equation or frequency of oscillation & frequency stability.

8 <sup>th</sup>	1 <sup>st</sup>	Wein Bridge Oscillator: circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability.
	2 <sup>nd</sup>	Define and classify Tuned amplifier
	3 <sup>rd</sup>	Explain parallel Resonant circuit
	4 <sup>th</sup>	Explain Resonance Curve & sharpness of Resonance.
	5 <sup>th</sup>	Working principle of single tuned Voltage & its limitation.
9 <sup>th</sup>	1 <sup>st</sup>	Working principle of Double tuned Amplifier & its limitation
	2 <sup>nd</sup>	Different type of Non –linear circuits
	3 <sup>rd</sup>	Clipper- diode series & shunt, positive and negative biased
	4 <sup>th</sup>	Combinational clippers circuit & its application.
	5 <sup>th</sup>	Different types of clamper circuit (positive & negative clampers) & its application.
10 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	TEST
	3 <sup>rd</sup>	Working of Astable Multivibrator with circuit diagram.
	4 <sup>th</sup>	Working of Monostable Multivibrator with circuit diagram.
	5 <sup>th</sup>	Working of Bistable Multivibrator with circuit diagram.
11 <sup>th</sup>	1 <sup>st</sup>	Working use of Integrator and Differentiator circuit using R-C circuit (Linear), input /output waveforms & frequency response.
	2 <sup>nd</sup>	Differential amplifier & explain its configuration & significance.
	3 <sup>rd</sup>	Block diagram representation of a typical Op-Amp
	4 <sup>th</sup>	Op-Amp equivalent circuits and draw the schematic symbol

	5 <sup>th</sup>	Discuss the types of integrated circuits manufactures designations of ICs, Package types, pin identification and temperature and ordering information.
12 <sup>th</sup>	1 <sup>st</sup>	Define the following electrical characteristics input offset voltage , input offset current, CMMR ,Large signal voltage gain , Slew rate.
	2 <sup>nd</sup>	Draw the explain the Open Loop configuration (Inverting Amplifier)
	3 <sup>rd</sup>	Draw the explain the Open Loop configuration (Non-inverting Amplifier)
	4 <sup>th</sup>	Draw the circuit diagram of the voltage series feedback amplifier
	5 <sup>th</sup>	Derive the close loop Voltage gain of feedback circuits input resistance , and output resistance, bandwidth and total output offset voltage with feedback.
13 <sup>th</sup>	1 <sup>st</sup>	QUIZE
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	Concept of Zero-Crossing Detector using Op-Amp.
	4 <sup>th</sup>	Block diagram and operation of IC 555 timer & its applications
	5 <sup>th</sup>	Block diagram and operation of IC 565 PLL & its applications
14 <sup>th</sup>	1 <sup>st</sup>	Working of current to voltage convertor using operational Amplifier.
	2 <sup>nd</sup>	Working of the Voltage to frequency Convertor using Operational Amplifier.
	3 <sup>rd</sup>	Working of the frequency to Voltage Conversion using Operational Amplifier.
	4 <sup>th</sup>	Operation of power supply using 78XX and 79XX, LM 317 Series with their PIN configuration.
	5 <sup>th</sup>	Functional block diagram & Working of IC regulator LM 317.
15 <sup>th</sup>	1 <sup>st</sup>	ASSIGNMENT CHECK
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION
	5 <sup>th</sup>	TEST

