Bhubanananda Orissa School of Engineering
Lesson Plan

Discipline: E&TC	**Semester:4th**	**Name of the Teaching Faculty:** NIBEDITA RAY, LECTURER IN E &TC ENGG
Subject: Analog Electronics & Linear IC	No of Days/per week class allotted:5 (Mon,Tue, Wed, Fri, Sat)	Semester from 14.02.2023 to 23.05.2023 No of weeks:15
Week No.	Class Day	Theory Topics
1st	14-02-2023	**Unit-1: Diode, Transistors and Circuits** 1.1 Working principle of Diode & its current equation, Specification and use of p-n junction diode
	15-02-2023	1.2 Breakdown of diode (Avalanche & Zener Breakdown) and Construction, working, Characteristics
	17-02-2022	1.3 Classification of Rectifiers and working of different types of Rectifiers- Half Wave Rectifier, Full Wave Rectifier (CT & Bridge type)
2nd	20-02-2023	1.4 Working principle of PNP and NPN transistor
	21-02-2023	1.4 Different types of transistor connection (CE, CB & CC). I/P and O/P characteristics of transistor in different connections.
	22-02-2023	1.5 Define ALPHA, BETA and GAMMA of transistors in various modes. Establish the Mathematical relationship between them.
	24-02-2023	1.6 Basic concept of Biasing, Types of Biasing,
	25-02-2023	1.6 Basic concept of Biasing, Types of Biasing Base register method
3rd	27-02-2023	1.6 Basic concept of Biasing, Types of Biasing, feedback register method .
	28-02-2023	1.6 Basic concept of Biasing, Potential divider Methode .
	01-03-2023	1.6 H-parameter model of BJT, load line (AC & DC) and determine the Q-point.
	03-03-2023	1.7 Types of Coupling, working principle and use of R-C Coupled Amplifier & Frequency Responses of R-C coupled amplifier & draw the curve.
	04-04-2023	**Unit-2: Audio Power Amplifiers** 2.1 Classify Power Amplifier & Differentiate between Voltage and Power Amplifier
4th	06-03-2023	2.2 Working principle of different types of Power Amplifier (Class-A, Class-B amplifier).
	10-03-2023	2.2 Working principle of different types of Power Amplifier (Class-AB, Class-C & Class D amplifier).
	11-03-2023	2.2 Working principle of different types of Power Amplifier (Class-AB, Class-C & Class D amplifier).

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5th	13-03-2023	2.3 Construction and working principle and advantages of Push Pull (Class-B) Amplifiers.
	14-03-2023	2.3 Construction and working principle and advantages of Push Pull (Class-B) Amplifiers
	15-03-2023	**Unit-3: FIELD EFFECT TRANSISTOR (FET)** 3.1 FET & its classifications & Differentiate between JFET & BJT
	17-03-2023	3.2 Construction, working principle & characteristics of JEFT. Explain JEFT as an amplifier, parameters of JFET & Establish relation among JFET parameters.
	18-03-2023	3.3 Construction & working principle MOSFET.
6th	20-03-2023	3.3 Classification of MOSFET & characteristics (Drain & Transfer)
	21-03-2023	3.4 Explain the operation of CMOS, VMOS & LDMOS
	22-03-2023	**Unit-4: FEED BACK AMPLIFIER & OSCILLATOR** 4.1 Define & classify Feedback Amplifier, principle of negative feedback with the help of block diagram, Types of feedback – negative &positive feedback.
	24-03-2023	4.2 Types of negative feedback – voltage shunt, voltage series, current shunt & current series. Characteristics - voltage gain, bandwidth, input impedance, output impedance, stability, noise, distortion in amplifiers.
	25-03-2023	4.3 Oscillator -block diagram of sine wave oscillator, Types, Requirement of oscillation-Barkhausen criterion.
7th	27-03-2023	4.4 RC oscillators – RC phase shift & Crystal: Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability.
	28-03-2023	**1st Class Test**
	29-03-2023	4.4 RC oscillators –Crystal Oscillator Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability
	31-03-2023	4.4 LC oscillators – Colpitts Oscillators: Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability.
8th	03-04-2023	4.4 LC oscillators – Colpitts & Hartley Oscillators: Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability.
	04-04-2023	4.4 LC oscillators – Wien Bridge Oscillators: Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability.
	05-04-2023	**Unit-5: TUNED AMPLIFIER & WAVE SHAPING CIRCUIT** 5.1 Defined and classify Tuned amplifier, Explain parallel Resonant circuit, Resonance Curve & sharpness of Resonance.
9th	10-04-2023	5.2 working principle of Single tuned Voltage& Double tuned Amplifier & its limitation.
	11-04-2023	5.3 Different type of Clipper circuit (diode series & shunt clipper circuits).
	12-04-2023	5.3 Different type of Clipper circuit (positive & negative biased, combinational clipper circuits) & its application.
	15-04-2023	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
10th	17-04-2023	5.5 Working of Astable Multivibrator with circuit diagram. Working of Monostable Multivibrator with circuit diagram. Working of Bistable Multivibrator with circuit diagram
	18-04-2023	5.6 Working & use of Integrator circuit using R- C circuit (Linear), input / output waveforms & frequency response. Working & use of Differentiator circuit using R- C circuit (Linear), input / output waveforms & frequency response.
	19-04-2023	**Unit-6: OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS** 6.1 Differential amplifier & explain its configuration & significance.

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11th	21-04-2023	6.2 Block diagram representation of a typical Op- Amp. its equivalent circuits and draw the schematic symbol.
	22-04-2023	6.3 Discuss the types of integrated circuits manufacturer's designations of IC's, Package types, pin identification and temperature and ordering information.
	24-04-2023	6.4 Define the following electrical characteristics - input offset voltage, input offset current, CMMR, Large signal voltage gain, Slew rate.
	25-04-2023	6.5 Draw and explain the Open Loop configuration (inverting Amplifier)
	26-04-2023	6.5 Draw and explain the Open Loop configuration (Non-inverting Amplifier)
	28-04-2023	**1st Internal Assessment**
	29-04-2023	6.6 Draw the circuit diagram of the voltage series feedback amplifier and derive the close loop Voltage gain, gain of feedback circuits, input resistance, output resistance, bandwidth and total output offset voltage with feedback.
12th	01-05-2023	6.7 Draw the circuit diagram of the voltage *shunt* feedback amplifier and derive the close loop Voltage gain, gain of feedback circuits, input resistance, output resistance, bandwidth and total output offset voltage with feedback.
	02-05-2023	**2nd Class Test**
	03-05-2023	**Unit-7. APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS & IC voltage regulator** 7.1 Discuss the summing scaling and averaging of inverting and non-inverting amplifiers
	06-05-2023	7.2 DC & AC Amplifies using OP-AMP.
13th	08-05-2023	7.3 Integrator using op-amp,differentiator using op-amp.
	09-05-2023	7.4 Active filter and describe the filter design of fast order low Pass Butterworth
	10-05-2023	7.5 Concept of Zero-Crossing Detector using Op-Amp
	12-05-2023	7.6 Block diagram & operation of IC 555 timer and its application.
	13-05-2023	7.6 Block diagram & operation of IC 565 PLL and its application.
14th	15-05-2023	7.7 Working of Current to voltage Convertor using Operational Amplifier
	16-05-2023	7.8 Working of the Voltage to Frequency Convertor using Operational Amplifier.
	17-05-2023	7.9 Working of the Frequency to Voltage Conversion using Operational Amplifier.
	20-05-2023	7.10 Operation of power supply using 78XX and 79XX, LM 317 Series with their PIN configuration 7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317.
15th	22-05-2023	**2nd Internal Assessment**
	23-05-2023	OVERALL REVISION

Nibedita Roy

Signature of Faculty

HOD(E&TC)

Sr. Lecturer
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Principal