

LESSON PLAN (SUMMER-2023)

Discipline: ETC	Semester: 4th	Name of the Teaching Faculty: SOMA DASH
Subject: ANALOG ELECTRONICS & LINEAR IC	No of Days /per week class allotted: 5	Semester From date: 14.02.2023 To 23.05.2023 No of Weeks:14
Week	Class Day	Theory / Practical Topics
1st	1st	Unit-1: DIODE, TRANSISTORS AND CIRCUITS(10) 1.1 Working principle, of Diode & its current equation, Specification and use of p-n junction diode.
	2nd	1.2 Breakdown of diode (Avalanche & Zener Breakdown) and Construction, working, Characteristics
	3rd	1.3 Classification of Rectifiers and working of different types of Rectifiers- Half-Wave Rectifier, Full-Wave Rectifier (CT & BRIDGE type)
	4th	continue
	5th	1.4 Working principle of p-n-p and n-p-n transistor, different types of transistor connection (CB, CE and CC) & input and output characteristics of transistor in different connections.
2nd	1st	continue
	2nd	1.5 Define ALPHA, BETA and GAMMA of transistors in various modes. Establish the Mathematical relationship between them.
	3rd	1.6 Basic concept of Biasing, Types of Biasing, h-parameter model of BJT, load line (AC & DC) and determine the Q-point.
	4th	continue
	5th	1.7 Types of Coupling, working principle and use of R-C Coupled Amplifier & Frequency Responses of R-C coupled Amplifier & draw the curve.
3rd	1st	Unit-2: AUDIO POWER AMPLIFIERS(08) 1.1 Classify Power Amplifier & Differentiate between Voltage and Power Amplifier.
	2nd	continue
	3rd	1.2 Working principle of different types of Power Amplifier (Class-A, Class-AB, Class-B and Class-C & Class D amplifier).
	4th	continue
	5th	continue
4th	1st	continue
	2nd	1.3 Construction and working principle and advantages of Push Pull (Class-B) Amplifiers
	3rd	continue
	4th	Unit-3: FIELD EFFECT TRANSISTOR (FET)(10) 3.1 FET & its classifications & Differentiate between JFET & BJT.
	5th	continue
5th	1st	3.2 Construction, working principle & characteristics of JFET & Explain JFET as an amplifier, parameters of JFET & Establish relation among JFET parameters.
	2nd	continue
	3rd	continue
	4th	3.3 Construction & working principle MOSFET & its classification & characteristics (Drain & Transfer)
	5th	continue
6th	1st	continue
	2nd	3.4 Explain the operation of CMOS, VMOS & LDMOS.
	3rd	continue
	4th	Unit-4: FEED BACK AMPLIFIER & OSCILLATOR(08) 4.1 Define & classify Feedback Amplifier, principle of negative feedback with the help of block diagram, Types of feedback – negative & positive feedback.
	5th	continue
7th	1st	4.2 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.
	2nd	continue
	3rd	4.3 Oscillator -block diagram of sine wave oscillator, Types Requirement of oscillation- Barkhausen criterion
	4th	continue
	5th	4.4 RC oscillators – RC phase shift, Crystal, LC oscillators – Colpitts, Hartley & Wien Bridge Oscillators: Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability

8th	1st	continue
	2nd	Unit-5: TUNED AMPLIFIER & WAVE SHAPING CIRCUIT(12) 5.1 Defined and classify Tuned amplifier, Explain parallel Resonant circuit, Resonance Curve & sharpness of Resonance.
	3rd	continue
	4th	5.2 working principle of Single tuned Voltage & Double tuned Amplifier & its limitation
	5th	continue
9th	1st	5.3 Different type of Non-linear circuits - Clipper, diode series & shunt, positive & negative biased & unbiased and combinational clipper clippers circuit & its application.
	2nd	continue
	3rd	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
	4th	continue
	5th	5.5 Working of Astable, Monostable & Bistable Multivibrator with circuit diagram.
10th	1st	continue
	2nd	5.6 Working & use of Integrator and Differentiator circuit using R- C circuit (Linear), input / output waveforms & frequency response.
	3rd	continue
	4th	Unit-6: OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS(14) 6.1 Differential amplifier & explain its configuration & significance.
	5th	continue
11th	1st	6.2 Block diagram representation of a typical Op- Amp, its equivalent circuits and draw the schematic symbol
	2nd	continue
	3rd	6.3 Discuss the types of integrated circuits manufacturer's designations of ICs, Package types, pin identification and temperature and ordering information.
	4th	continue
	5th	6.4 Define the following electrical characteristics input offset voltage, input offset current, CMMR, Large signal voltage gain, Slew rate
12th	1st	continue
	2nd	6.5 Draw and explain the Open Loop configuration (inverting, non-inverting Amplifier)
	3rd	continue
	4th	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, and output resistance, bandwidth and total output offset voltage with feedback.
	5th	continue
13th	1st	6.7 Draw the circuit diagram of the voltage shunt feedback amplifier and derive the close loop, Voltage gain, gain of feedback circuits and input resistance, and output resistance, bandwidth and total output offset voltage with feedback.
	2nd	continue
	3rd	Unit-7. APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS & IC voltage regulator (13) 7.1 Discuss the summing scaling and averaging of inverting and non-inverting amplifiers
	4th	7.2 DC & AC Amplifies using OP-AMP.
	5th	7.3 Integrator and differentiator using op-amp.
14th	1st	7.4 Active filter and describe the filter design of fast order low Pass Butterworth
	2nd	7.5 Concept of Zero-Crossing Detector using Op-Amp ,7.6 Block diagram and operation of IC 555 timer & IC 565 PLL & its applications.
	3rd	continue
	4th	7.7 Working of Current to voltage Convertor using Operational Amplifier
	5th	7.8 Working of the Voltage to Frequency Convertor using Operational Amplifier.
15th (Extra)	1st	7.9 Working of the Frequency to Voltage Conversion using Operational Amplifier.
	2nd	7.10 Operation of power supply using 78XX and 79XX, LM 317 Series with their PIN configuration
	3rd	continue
	4th	7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317.
	5th	continue