

## LESSON PLAN FOR Analog Electronics & OPAMP(Th2)

<b>Discipline: Electrical Engineering</b>	<b>Semester: 4th</b>	<b>Name of the Teaching Faculty: Ms. Deepika sarkar (Lect. In ETC)</b>
<b>Subject: Analog Electronics &amp; OPAMP</b>	<b>No. of days per week class allotted: 4</b>	<b>Semester From Date : 10.03.22 to Date: 10.06.22</b>  <b>Required No. of required Weeks: 15</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory</b>
		<b>1. P-N JUNCTION DIODE:</b>
1st	1st	1.1. Overview of the syllabus concept of analog electronics and introduction to PN Junction diode
	2nd	1.2. Working of Diode 1.3. V-I characteristic of PN junction Diode.
	3rd	1.4 DC load line 1.5 Important terms such as Ideal Diode, Knee voltage.
	4th	Junctions break down. 1.6.1 Zener breakdown 1.6.2 Avalanche breakdown
2nd	1st	1.7 P-N Diode clipping Circuit. 1.8 P-N Diode clamping Circuit
	2nd	Question answer Session.
		<b>2. SPECIAL SEMICONDUCTOR DEVICES:</b>
	3rd	2.1 Thermistors, Sensors & barretters
	4th	2.2 Zener Diode
3rd	1st	2.3 Tunnel Diode
	2nd	2.4 PIN Diode
	3rd	Questions answer session.
		<b>3. RECTIFIER CIRCUITS &amp; FILTERS:</b>
4th	4th	3.1 Classification of rectifiers
	1st	3.2 Analysis of half wave, full wave centre tapped and Bridge rectifiers
	2nd	3 Calculate: 3.2.1 DC output current and voltage 3.2.2 RMS output current and voltage
	3rd	3.2.3 Rectifier efficiency 3.2.4 Ripple factor
	4th	3.2.5 Regulation 3.2.6 Transformer utilization factor 3.2.7 Peak inverse voltage 3.2.7 Peak inverse voltage

5th	1st	3.3 Filters: 3.3.1 Shunt capacitor filter
	2nd	3.3.2 Choke input filter 3.3.3 $\pi$ filter
		<b>4. TRANSISTORS:</b>
	3rd	4.1 Principle of Bipolar junction transistor
6th	4th	4.2 Different modes of operation of transistor
	1st	4.3 Current components in a transistor
	2nd	4.4 Transistor as an amplifier
	3rd	4.5 Transistor circuit configuration & its characteristics 4.5.1 CB Configuration
	4th	4.5.2 CE Configuration
7th	1st	4.5.3 CC Configuration
		<b>5. TRANSISTOR CIRCUITS:</b>
	2nd	5.1 Transistor biasing
	3rd	5.2 Stabilization
8th	4th	5.3 Stability factor
	1st	5.4 Different method of Transistors Biasing
	2nd	5.4.1 Base resistor method
	3rd	5.4.2 Collector to base bias
9th	4th	5.4.3 Self bias or voltage divider method
		<b>6. TRANSISTOR AMPLIFIERS &amp; OSCILLATORS:</b>
	1st	6.1 Practical circuit of transistor amplifier 6.1 Practical circuit of transistor amplifier
	2nd	6.2 DC load line and DC equivalent circuit 6.3 AC load line and AC equivalent circuit
	3rd	6.4 Calculation of gain 6.5 Phase reversal
10th	4th	6.6 H-parameters of transistors 6.7 Simplified H-parameters of transistors
	1st	6.8 Generalised approximate model 6.9 Analysis of CB, CE, CC amplifier using generalised approximate model
	2nd	6.10 Multi stage transistor amplifier
	3rd	6.10.1 R.C. coupled amplifier, 6.10.2 Transformer coupled amplifier
	4th	6.11 Feed back in amplifier 6.11.1 General theory of feed back

11th	1st	6.11.2 Negative feedback circuit 6.11.3 Advantage of negative feed back
	2nd	6.12 Power amplifier and its classification 6.12.1 Difference between voltage amplifier and power amplifier
	3rd	6.12.2 Transformer coupled class A power amplifier 6.12.3 Class A push – pull amplifier 6.12.4 Class B push – pull amplifier
	4th	6.13 Oscillators 6.13.1 Types of oscillators
12th	1st	6.13.2 Essentials of transistor oscillator 6.13.3 Principle of operation of tuned collector, Hartley, colpitt, phase shift, wein-bridge oscillator (no mathematical derivations)
		<b>7.FIELD EFFECT TRANSISTOR:</b>
	2nd	7.1 Classification of FET
	3rd	7.2 Advantages of FET over BJT
	4th	7.3 Principle of operation of BJT
13th	1st	7.4 FET parameters (no mathematical derivation) 7.4.1 DC drain resistance
	2nd	7.4.2 AC drain resistance 7.4.3 Trans-conductance
	3rd	7.5 Biasing of FET
		<b>8. OPERATIONAL AMPLIFIERS:</b>
	4th	8.1 General circuit simple of OP-AMP and IC – CA – 741 OP AMP
14th	1st	8.2 Operational amplifier stages
	2nd	8.3 Equivalent circuit of operational amplifier
	3rd	8.4 Open loop OP-AMP configuration
	4th	8.5 OPAMP with fed back
15th	1st	8.6 Inverting OP-AMP 8.7 Non inverting OP-AMP
	2nd	8.8 Voltage follower & buffer 8.9 Differential amplifier
	3rd	8.9.1 Adder or summing amplifier 8.9.2 Sub tractor 8.9.3 Integrator
	4th	8.9.4 Differentiator 8.9.5 Comparator

Principal

HOD

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