PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH

LESSON PLAN
Session: 2024-25

4th Semester

Electrical Engineering

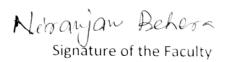## ANALOG ELECTRONICS & OP-AMP

Sri Niranjan Behera
Sr. Lect. in Electronics& tele comm.

Subject: <u>ANALOG ELECTRONICS & OP-AMP</u>   No. of Days/per week class allotted : <u>04</u>

Semester From Date :<u>04-02-2025</u>   To   Date :<u>17-05-2025</u>   No. of Weeks : <u>15</u>

Week	Class Day	Theory /Practical Topics
1st	1	P-N junction diode
	2	Working of diode
	3	V-I characteristic of P-N junction diode
	4	D-C load line
2nd	1	Ideal diode , Knee voltage, Break down voltage
	2	Clipping and clamping circuit
	3	Thermioster, sensor and barretters
	4	Zener diode
3rd	1	Tunnel diode
	2	PIN diode
	3	Revision of previous chapter
	4	Rectifier and classification of rectifier
4th	1	Half wave rectifier and efficiency of Half wave rectifier
	2	Full wave rectifier 1. Centre tapped full wave rectifier
	3	Bridge type full wave rectifier
	4	Efficiency and ripple factor of full wave and half wave rectifier
5th	1	Filter and different type of filter
	2	Principle of bipolar junction transistor (BJT)
	3	Different modes of operation of transistor
	4	Transistor working (PNP & NPN)
6th	1	Transistor as an amplifier
	2	Current component in a transistor
	3	Transistor circuit configuration & characteristic of common-base configuration
	4	Common – Emitter configuration

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Week	Class Day	Theory /Practical Topics
7th	1	Common – collector configuration
	2	Transistor Biasing
	3	Stabilization
	4	Stability factor
8th	1	Different type of biasing
	2	Base resistor biasing
	3	Feedback resistor biasing
	4	Voltage divider biasing
9th	1	Practical circuit of transistor amplifier
	2	DC load line and DC equivalent
	3	AC load line and AC equivalent circuit calculation of gain
	4	Phase reversal, H-parameter of transistor
10th	1	Simplified H-parameter of transistor Generalised approximate model
	2	Analysis of CB, CE &CC amplifier using generalised approximate model
	3	Multi stage transistor coupled amplifier
	4	R-C coupled and transistor coupled amplifier
11th	1	Feedback amplifier, Negative feedback circuit Advantage of negative feedback.
	2	Power amplifier and classification. Difference between voltage and power amplifier.
	3	Transformer coupled class-A amplifier, Push-pull amplifier.
	4	Oscillator and its types. Essentials of transistor oscillator
12th	1	Different type of oscillator. Tuned collector, Hartley, colpitts , phase shift and wein-bridge oscillator
	2	Field Effect transistor (FET)
	3	Advantage of FET and BJT
	4	Principle of operation of FET

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Week	Class Day	Theory /Practical Topics
13th	1	FET parameter 1.DC drains resistance 2. AC drain resistance 3.Transconductance
	2	Biasing of FET
	3	Revision of FET
	4	Operational amplifier (op-amp) . Block Diagram and Equivalent Circuit of 24 To Date :26-04-2024 No. of Weeks : 15op-amp
14th	1	Open-loop op-amp configuration
	2	Close-loop op-amp configuration. Inverting op-amp
	3	Non-inverting op-amp, voltage follower & buffer differential amplifier.
	4	Adder or summing amplifier
15th	1	Subtractor, Integrator
	2	Differentiator and comparator
	3	Revision and probable question discussion
	4	Question of previous year semester Examination

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