



GOVT. POLYTECHNIC KORAPUT DEPARTMENT OF ELECTRICAL ENGG.

TH2. ANALOG ELECTRONICS AND OP-AMP

Name of the Course: Diploma in Electrical Engineering			
Faculty: S Bichiballi			
Course code:	Th2	Semester	4 th
Total Period:	60	Examination	3 hrs
Theory periods:	4P/week	Internal Assessment :	20
Maximum marks:	100	End Semester Examination:	80

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods
1.	PN junction diode	6
2.	Special semiconductor devices	5
3.	Rectifier circuits & filters	7
4.	Transistors	7
5.	Transistor circuits	7
6.	Transistor amplifiers & oscillators	13
7.	Field effect transistor	6
8.	Operational amplifiers	9
Total		60

LESSON PLAN

Week	Day	Theory topic
1 st	1 st	PN junction diode: P-N Junction Diode, Working of Diode.
	2 nd	V-I characteristic of PN junction Diode, DC load line.
	3 rd	Important terms such as Ideal Diode, Knee voltage.
	4 th	Junctions break down: Zener breakdown, Avalanche breakdown
2 nd	1 st	P-N Diode clipping Circuit.
	2 nd	P-N Diode clamping Circuit
	3 rd	Special semiconductor devices: Thermistors.
	4 th	Sensors & Barretters.
3 rd	1 st	Zener Diode.
	2 nd	Tunnel Diode.
	3 rd	PIN Diode
	4 th	Rectifier circuits & filters: Classification of rectifiers.



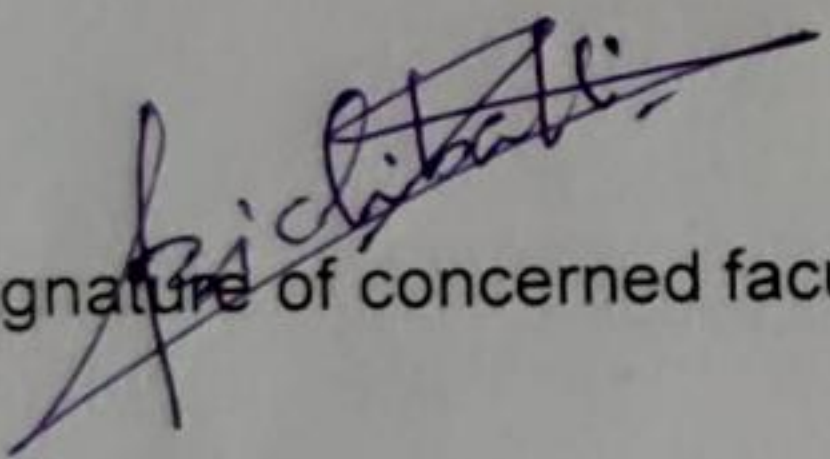
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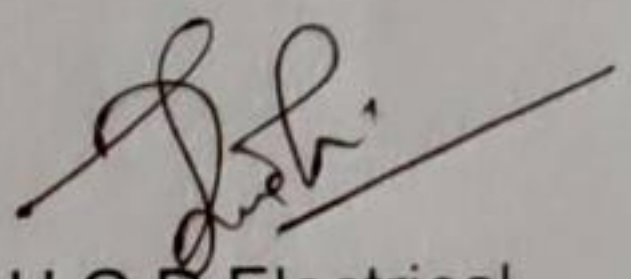
4 th	1 st	Analysis of half wave rectifier and calculate: DC output current and voltage, RMS output current and voltage, Rectifier efficiency, Ripple factor, Regulation, Transformer utilization factor, Peak inverse voltage.
	2 nd	Analysis of full wave centre tapped rectifier and calculate: DC output current and voltage, RMS output current and voltage, Rectifier efficiency, Ripple factor, Regulation, Transformer utilization factor, Peak inverse voltage.
	3 rd	Analysis of Bridge rectifier and calculate: DC output current and voltage, RMS output current and voltage, Rectifier efficiency, Ripple factor, Regulation, Transformer utilization factor, Peak inverse voltage.
	4 th	Filters: Shunt capacitor filter.
5 th	1 st	Choke input filter.
	2 nd	π filter .
	3 rd	Transistors: Principle of Bipolar junction transistor.
	4 th	Different modes of operation of transistor.
6 th	1 st	Current components in a transistor.
	2 nd	Transistor as an amplifier.
	3 rd	Transistor circuit configuration & its characteristics: CB Configuration.
	4 th	CE Configuration.
7 th	1 st	CC Configuration.
	2 nd	Transistor circuits: Transistor biasing.
	3 rd	Stabilization, Stability factor.
	4 th	Different methods of Transistors Biasing: Base resistor method.
8 th	1 st	Collector to base bias.
	2 nd	Self bias or voltage divider method.
	3 rd	Previous year question discussion.
	4 th	Previous year question discussion.
9 th	1 st	Transistor amplifiers & oscillators: Practical circuit of transistor amplifier.
	2 nd	DC load line and DC equivalent circuit, AC load line and AC equivalent circuit.
	3 rd	Calculation of gain, Phase reversal.
	4 th	H-parameters of transistors.
10 th	1 st	Simplified H-parameters of transistors, generalised approximate model.
	2 nd	Analysis of CB, CE, CC amplifier using generalised approximate model.
	3 rd	Multi stage transistor amplifier: R.C. coupled amplifier, Transformer coupled amplifier.
	4 th	Feed back in amplifier, General theory of feedback.
11 th	1 st	Negative feedback circuit, Advantage of negative feedback.
	2 nd	Power amplifier and its classification. Difference between voltage amplifier and power amplifier.
	3 rd	Transformer coupled class A power amplifier: Class A push – pull amplifier, Class B push – pull amplifier.
	4 th	Oscillators: Types of oscillators, Essentials of transistor oscillator.
12 th	1 st	Principle of operation of tuned collector, Hartley, Colpitt, phase shift, wein-bridge oscillator (no mathematical derivations).



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	2 nd	Field effect transistor: Classification of FET.
	3 rd	Advantages of FET over BJT.
	4 th	Principle of operation of BJT.
13 th	1 st	FET parameters (no mathematical derivation): DC drain resistance, AC drain resistance, Trans-conductance.
	2 nd	Biasing of FET.
	3 rd	Biasing of FET.
	4 th	Operational Amplifiers: General circuit simple of OP-AMP and IC – CA – 741 OPAMP
14 th	1 st	Operational amplifier stages.
	2 nd	Equivalent circuit of operational amplifier.
	3 rd	Open loop OP-AMP configuration, OPAMP with fed back.
	4 th	Inverting OP-AMP.
15 th	1 st	Non inverting OP-AMP.
	2 nd	Voltage follower & buffer.
	3 rd	Differential amplifier: Adder or summing amplifier, Subtractor.
	4 th	Integrator, Differentiator, Comparator.


Signature of concerned faculty


H.O.D Electrical