

Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: S Santosh Kumar Patra

Semester: 4th

Subject : **Analog Electronics and OP-AMP**

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Week	Class Day	Topic To Be Covered
1st	1st	Introduction to semiconductor and its Application
	2nd	P-N Junction Diode & Its working
	3rd	V-I characteristic of PN junction Diode.
	4th	DC load line
2nd	1st	Important terms such as Ideal Diode, Knee voltage
	2nd	Junctions break down.(Zener breakdown, Avalanche breakdown)
	3rd	P-N Diode clipping Diode Clamping Circuit.
	4th	Thermistors, Sensors & barretters
3rd	1st	Zener Diode and Tunnel Diode
	2nd	PIN Diode
	3rd	Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate:
	4th	DC output current and voltage
4th	1st	RMS output current and voltage
	2nd	Rectifier efficiency & Ripper factor
	3rd	Regulation
	4th	Transformer utilization factor
5th	1st	Peak inverse voltage
	2nd	Filters
	3rd	Shunt capacitor filter
	4th	Choke input filter
6th	1st	π filter

	2nd	Principle of Bipolar junction transistor
	3rd	Different modes of operation of transistor
	4th	Current components in a transistor
7th	1st	Transistor as an amplifier
	2nd	Transistor circuit configuration & its characteristics
	3rd	CB ,CE, CC Configuration
	4th	Transistor biasing
8th	1st	Stabilization & Stability factor
	2nd	Different method of Transistors Biasing
	3rd	Base resistor method
	4th	Collector to base bias
9th	1st	Self bias or voltage divider method
	2nd	Practical circuit of transistor amplifier, DC load line and DC equivalent circuit
	3rd	AC load line and AC equivalent circuit, Calculation of gain, Phase reversal
	4th	H-parameters of transistors
10th	1st	Simplified H-parameters of transistors
	2nd	Generalised approximate model
	3rd	Multi stage transistor amplifier
	4th	R.C. coupled amplifier and Transformer coupled amplifier
11th	1st	Feed back in amplifier
	2nd	General theory of feed back
	3rd	Negative feedback circuit
	4th	Advantage of negative feed back
12th	1st	Power amplifier and its classification
	2nd	Difference between voltage amplifier and power amplifier
	3rd	Transformer coupled class A power amplifier
	4th	Class A push – pull amplifier
13th	1st	Class B push – pull amplifier
	2nd	Types of oscillators & Essentials of transistor oscillator, Principle of operation of tuned collector, Hartley, colpitt, phase wein-bridge oscillator
	3rd	
	4th	Classification of FET, Advantages of FET over BJT and Principle of operation of BJT
14th	1st	FET parameters
	2nd	DC drain resistance, AC drain resistance, Trans-conductance
15th	1st	Biasing of FET

	2nd	General circuit simple of OP-AMP and IC – CA – 741 OP AMP
	3rd	Operational amplifier stages
	4th	Equivalent circuit of operational amplifier
	VII	Open loop OP-AMP configuration
16th	1st	Inverting OP-AMP & Non inverting OP-AMP
	2nd	Voltage follower & buffer
	3rd	Differential amplifier
	4th	Adder or summing amplifier
17th	1st	Sub tractor, Integrator, Differentiator and comparator
	2nd	Doubt Clearing & Previous Year Question Discussion
	3rd	
	4th	

Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: Santosh Kumar Subudhi

Semester: 4th

Subject: **Electrical Machine**

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Date	Module	Topics To Be Covered
1 st	1st	Discuss properties & uses of different conducting material.
	2nd	Discuss properties & use of various insulating materials used electrical engineering.
	3rd	Explain various magnetic materials & their uses.
	4th	Explain construction of DC Generator
2 nd	1st	Principle. & application of DC Generator
	2nd	Principle. & application of DC Generator
	3rd	Classify DC generator including voltage equation.
	4th	Derive EMF equation & simple problems.
3 rd	1st	Derive EMF equation & simple problems.
	2nd	Solve Problems.
	3rd	
	4th	Define parallel operation of DC generators
4 th	1st	Explain Principle of working of a DC motor.
	2nd	Explain Principle of working of a DC motor.
	3rd	PROBLEM
	4th	
5 th	1st	Explain concept of development of torque & back EMF in DC motor including simple problems.
	2nd	DC motor simple problems.
	3rd	DC motor simple problems
	4th	Derive equation relating to back EMF, Current, Speed and Torque equation

6 th	1st	Classify DC motors & explain characteristics, application.
	2nd	State & explain three point & four point stator/static of DC motor by solid State converter
	3rd	State & explain three point & four point stator/static of DC motor by solid State converter
	4th	State & explain three point & four point stator/static of DC motor by solid State converter
7 th	1st	Explain Speed of DC motor by field control method.
	2nd	Explain Speed of DC motor by armature control method.
	3rd	State Mathematical representation of phasors, significant of operator “J”
	4th	Discuss Addition, Subtraction, Multiplication and Division of phasor quantities.
8 th	1st	Explain AC series circuits containing resistance, capacitances, Conception of active, reactive and apparent power and Q-factor of series circuits & solve related problems.
	2nd	PROBLEM SOLVING
	3rd	
	4th	Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances Q-factor of parallel circuits.
9 th	1st	PROBLEM SOLVING
	2nd	
	3rd	Star and Delta circuit.
	4th	Line and Phase relationship
10 th	1st	Power equation with numerical problems
	2nd	State construction & working principle of transformer & define connection of Ideal transformer
	3rd	Derive of EMF equation of transformer, voltage transformation ratio.
	4th	
11 th	1st	Discuss Flux, Current, EMF components of transformer and their phasor diagram under no load condition.
	2nd	
	3rd	Discuss Phasor representation of transformer flux, current EMF primary and secondary voltages under loaded condition.
	4th	Explain types of losses in Single Phase (1- ϕ) Transformer.
12 th	1st	PROBLEM SOLVING
	2nd	
	3rd	Explain open circuit & short-circuit test (simple problems) Explain construction feature, types of three-phase induction motor.

13 th	4th	State principle of development of rotating magnetic field in the stator.
	1st	
	2nd	Establish relationship between synchronous speed, actual speed and slip of induction motor.
	3rd	
	4th	Establish relation between torque, rotor current and power factor.
14 th	1st	Explain starting of an induction motor by using DOL and Star-Delta stator. State industrial use of induction motor.
	2nd	
	3rd	Explain construction features of shaded pole type of single-phase induction motor.
	4th	Explain construction features of capacitor type of single-phase induction motor.
15 th	1st	Explain principle of operation of capacitor type of single-phase induction motor.
	2nd	
	3rd	Explain principle of operation of shaded pole type of single-phase induction motor.
	4th	
16 th	1st	Explain construction & operation of AC series motor.
	2nd	
	3rd	
	4th	Concept of alternator & its application.
17 th	1st	Problem Solving
	2nd	
	3rd	Previous Year Question Paper Solving
	4th	

Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: Shradhanjali Mishra

Semester: 4th

Subject : Electrical Measurement & Instrumentation

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Date	Module	Topics To Be Covered
1st	1st	Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance.
	2nd	Classification of measuring instruments.
	3rd	
	4th	Explain Deflecting, controlling and damping arrangements
2nd	1st	
	2nd	Describe Construction, principle of operation, errors, ranges merits and demerits of
	3rd	
	4th	Moving iron type instruments.
3rd	1st	Permanent Magnet Moving coil type instruments.
	2nd	Dynamometer type instruments
	3rd	Rectifier type instruments
	4th	Induction type instruments
4th	1st	Extend the range of instruments by use of shunts and Multipliers.
	2nd	Solve Numerical
	3rd	
5th	1st	Describe Construction, principle of working of Dynamometer type wattmeter
	2nd	
	3rd	What are the Errors in Dynamometer type wattmeter and methods of their correction
	4th	Introduction to meters
6th	1st	Single Phase Induction type Energy meters – construction.
	2nd	Single Phase Induction type Energy meters – working principle

		and their compensation and adjustments.
	3rd	Testing of Energy Meters
	4th	Tachometers, types and working principles
7th	1st	Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters.
	2nd	
	3rd	Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
	4th	
8th	1st	Synchrosopes – objectives and working.
	2nd	Phase Sequence Indicators and its working
	3rd	Classification of resistance
	4th	Explain Measurement of low resistance by voltage drop and potentiometer method & its use to Measure resistance.
9th	1st	
	2nd	Explain Measurement of medium resistance by wheat Stone bridge method and substitution Method.
	3rd	
	4th	Explain Measurement of high resistance by loss of charge method.
	1st	Explain construction & principle of operations (meggers) insulation resistance & Earth resistance megger.
10th	2nd	
	3rd	Explain construction and principles of Multimeter.
	4th	Explain measurement of inductance by
	1st	Maxewell's Bridge method.
11th	2nd	Owen Bridge method
	3rd	Explain measurement of capacitance by
	4th	De Sauty Bridge method
	1st	Schering Bridge method
12th	2nd	LCR Bridge method
	3rd	Define Transducer, sensing element or detector element and transduction elements.
	4th	Classify transducer. Give examples of various class of transducer.
	1st	
13th	2nd	Resistive transducer
	3rd	Linear and angular motion potentiometer.
	4th	Thermistor and Resistance thermometers.
	1st	Wire Resistance Strain Gauges
14th	2nd	Inductive Transducer
	3rd	Principle of linear variable differential Transformer (LVDT)
	4th	Uses of LVDT.

	1st	Capacitive Transducer.
15th	2nd	General principle of capacitive transducer.
	3rd	Variable area capacitive transducer.
	4th	Change in distance between plate capacitive transducer.
	1st	Piezo electric Transducer and Hall Effect Transducer with their applications.
16th	2nd	Principle of operation of Cathode Ray Tube.
	3rd	Principle of operation of Oscilloscope (with help of block diagram).
	4th	Measurement of DC Voltage & current.
	1st	Measurement of AC Voltage, current, phase & frequency.
17th	2nd	Revision of all topics and discussion of Previous Years Question Papers
	3rd	
	4th	

Signature of the Teacher

Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: Madhubrata Dash

Semester: 4th

Subject : GENERATION TRANSMISSION & DISTRIBUTION

Session Duration: Rashmi Rekha Pal

Class From: 16/01/2024 to 26/04/2024

Date	Module	Topics To Be Covered
1 st	1 st	Elementary idea on generation of electricity from Thermal, Hydel, Nuclear, Power station.
	2 nd	
	3 rd	
	4 th	
2 nd	1 st	Layout diagram of generating stations.
	2 nd	
	3 rd	
	4 th	Introduction to Solar Power Plant (Photovoltaic cells).
3 rd	1 st	Draw layout of transmission and distribution scheme.
	2 nd	Explain voltage Regulation & efficiency of transmission.
	3 rd	State and explain Kelvin's law for economical size of conductor.
	4 th	Explain corona and corona loss on transmission lines.
4 th	1 st	State types of supports, size and spacing of conductor.
	2 nd	Types of conductor materials.
	3 rd	State types of insulator and cross arms.
	4 th	Derive for sag in overhead line with support at same level and different level (approximate formula effect of wind, ice and temperature on sag simple problem)
5 th	1 st	
	2 nd	
	3 rd	Calculation of regulation and efficiency

	4 th	
6 th	1 st	Explain EHV AC transmission.
	2 nd	Explain Reasons for adoption of EHV AC transmission.
	3 rd	Problems involved in EHV transmission.
	4 th	Explain HV DC transmission.
7 th	1 st	Explain HV DC transmission.
	2 nd	State Advantages and Limitations of HVDC transmission system.
	3 rd	Introduction to Distribution System.
	4 th	Explain Connection Schemes of Distribution System – (Radial, Ring Main and Inter connected system)
8 th	1 st	Explain DC distributions (a) Distributor fed at one End (b) Distributor fed at both the ends (c) Ring distributors.
	2 nd	Explain AC distribution system.
	3 rd	Explain Method of solving AC distribution problem
	4 th	
9 th	1 st	Explain three phase four wire star connected system arrangement
	2 nd	
	3 rd	Explain cable insulation of cables
	4 th	Classification of cables.
10 th	1 st	State Types of L. T. & H.T. cables with constructional features.
	2 nd	State and Explain Methods of cable lying.
	3 rd	State methods of Localisation of cable faults – Murray and Varley loop test for short circuit fault/Earth fault.
	4 th	State and explain causes of low power factor.
11 th	1 st	Explain methods of improvement of power factor.
	2 nd	Define & explain Load curves.
	3 rd	Define & explain Demand factor.
	4 th	Define & explain Maximum demand.
12 th	1 st	Define & explain Load factor.
	2 nd	Define & explain Diversity factor.
	3 rd	Define & explain Plant capacity factor.
	4 th	Define & explain peak load and Base load on power station
13 th	1 st	Explain flat rate rate tariff with problems
	2 nd	Explain two part tariff with problems
	3 rd	Explain and block rate tariff with problems
	4 th	Draw and explain layout of LT. HT and EHT substation
14 th	1 st	

	2 nd	Draw and Explain Earthing of Substation
14 th	3 rd	Draw and Explain Earthing of Transmission
	4 th	Draw and Explain Earthing of Distribution Lines
15 th	1 st	Problem Solving
	2 nd	
	3 rd	Solve Previous Year Question Paper
	4 th	