Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: S Sanjay 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

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Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: Sumitra Behera

Semester: 4th

Subject: **Electrical Machine**

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

Week	Class Day	Topics To Be Covered
1st	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
2nd	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.
3rd	1st	Derive EMF equation & simple problems.
	2nd	Solve Problems.
	3rd	
	4th	Define parallel operation of DC generators
4th	1st	Explain Principle of working of a DC motor.
	2nd	Explain Principle of working of a DC motor.
	3rd	PROBLEM
	4th	
5th	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

6th	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
7th	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.
8th	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.
9th	1st	PROBLEM SOLVING
	2nd	
	3rd	Star andDeltacircuit.
	4th	LineandPhaserelationship
10th	1st	Powerequationwithnumericalproblems
	2nd	State construction & working principle of transformer & define connection of Ideal transformer
	3rd	Derive of EMF equation of transformer, voltage transformation ratio.
	4th	
11th	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-ø) Transformer.
12th	1st	PROBLEM SOLVING
	2nd	Explain open circuit & short-circuit test (simple problems)
	3rd	Explain construction feature, types of three-phase induction motor.

	4th	State principle of development of rotating magnetic field in the stator.
13th	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.
14th	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.
15th	1st	
	2nd	Explain principle of operation of capacitor type of single-phase induction motor.
	3rd	
	4th	Explain principle of operation of shaded pole type of single-phase induction motor.
16th	1st	
	2nd	Explain construction & operation of AC series motor.
	3rd	
	4th	Concept of alternator & its application.
17th	1st	Problem Solving
	2nd	
	3rd	Previous Year Question Paper Solving
	4th	

Vedang Institute of Technology, 2nd Shift

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Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: Subash Chandra Behera

Semester: 4th

Subject :Electrical Measurement & Instrumentation

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

Week	Class Day	Topics To Be Covered
1st	1st	Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance.
	2nd	Classification of measuringinstruments.
	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 typeinstruments.
3rd	1st	Permanent Magnet Moving coil typeinstruments.
	2nd	Dynamometer typeinstruments
	3rd	Rectifier typeinstruments
	4th	Induction typeinstruments
4th	1st	Extend the range of instruments by use of shunts andMultipliers.
	2nd	SolveNumerical
	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 theircorrection
	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 EnergyMeters
	4th	Tachometers, types and workingprinciples
7th	1st	Principle of operation and construction of Mechanical and Electrical resonance Type frequencymeters.
	2nd	
	3rd	Principle of operation and working of Dynamometer type single phase and three phase power factormeters.
	4th	
8th	1st	Synchroscopes – objectives andworking.
	2nd	Phase Sequence Indicators and its working
	3rd	Classification ofresistance
	4th	Explain Measurement of low resistance by voltage drop and potentiometer method & its use to Measureresistance.
9th	1st	
	2nd	Explain Measurement of medium resistance by wheat Stone bridge method and substitutionMethod.
	3rd	
	4th	Explain Measurement of high resistance by loss of chargemethod.
	1st	Explain construction & principle of operations (meggers) insulation resistance & Earth resistancemegger.
10th	2nd	
	3rd	Explain construction and principles ofMultimeter.
	4th	Explain measurement of inductance by
	1st	Maxewell's Bridgemethod.
11th	2nd	Owen Bridge method
	3rd	Explain measurement of capacitance by
	4th	De Sauty Bridgemethod
	1st	Schering Bridgemethod
12th	2nd	LCR Bridgemethod
	3rd	DefineTransducer,sensingelementordetectorelementandtransductionelements.
	4th	Classifytransducer.Giveexamplesof variousclassof transducer.
	1st	
13th	2nd	Resistivetransducer
	3rd	Linearandangularmotionpotentiometer.
	4th	ThermistorandResistancethermometers.
	1st	WireResistanceStrainGauges
14th	2nd	InductiveTransducer
	3rd	PrincipleoflinearvariabledifferentialTransformer(LVDT)
	4th	UsesofLVDT.
	1st	CapacitiveTransducer.

15th	2nd	Generalprincipleof capacitivetransducer.
	3rd	Variableareacapacitivetransducer.
	4th	Changeindistancebetweenplate capacitivetransducer.
	1st	PiezoelectricTransducerandHallEffectTransducerwiththeirapplications.

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Department of Electrical & Electronics Engineering

Lesson Plan for EvenSemester

Course: Diploma in Engineering

Teachers Name: Smrutirekha Panda

Semester: 4th

Subject : GENERATION TRANSMISSION & DISTRIBUTION

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

Week	Class Day	Topics To Be Covered
1st	1st	ElementaryideaongenerationofelectricityfromThermal,Hydel,Nuclear,Power station.
	2nd	
	3rd	
	4th	
2nd	1st	Layout diagramofgenerating stations.
	2nd	
	3rd	
	4th	IntroductiontoSolarPowerPlant(Photovoltaiccells).
3rd	1st	Draw layout of transmission and distribution scheme.
	2nd	Explain voltage Regulation & efficiency of transmission.
	3rd	State and explain Kelvin's law for economical size of conductor.
	4th	Explain corona and corona loss on transmission lines.
4th	1st	State types of supports, size and spacing of conductor.
	2nd	Types of conductor materials.
	3rd	State types of insulator and cross arms.
	4th	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)
5th	1st	
	2nd	Calculationof regulationandefficiency
	3rd	

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

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