LESSON PALN 2023(SUMMER)		
Dicipline: ELECTRICAL ENGG.	Semester :4th Sem	Name of the Teaching Faculty : Swetaleena Dehury
Subject: ELECTRICAL DRAWING.	No.of days/week class alloted:6p(55Min)/week	Semester From date: 14 Feb 2023 to Date: 25 may 2023 No . Of Weeks:15
Week	Class/ Date	Topics
1ST (Feb-2023)	14/2/23	Symbol used in electrical engineering
	16/2/23	Symbol used in electrical engineering
2nd (Feb-2023)	21/2/23	3 point dc motor starter
	23/2/23	4 point dc motor starter
3rd (Feb/March-2023)	28/2/23	DOL Starter
	2/3/23	star delta starter
4th (March-2023)	9/3/23	Auto Transformer starter
	11/3/23	Rotor Resistance starter
5th (March-2023)	14/3/23	Draw Dc machine parts pole, pole shoes
	16/3/23	Commutator
6th (March-2023)	21/3/23	Draw armature
	23/3/23	Armature
7th (March-2023)	28/3/23	Simple lap winding
	31/3/23	simple wave winding
8th (April-2023)	4/4/23	Draw 1 phase & 3phase transformer
	6/4/23	stepped core type
9th (April-2023)	13/4/23	plane shell type
	15/4/23	plate earthing
10th (April-2023)	18/4/23	pipe earthing
	20/4/23	single line diagram of 33/11kv distribution system
11th (April-2023)	25/4/23	single line diagram of 11/.4kv distribution system
	28/4/23	Draw electrical symbol using software
12th (May 2023)	2/5/23	Draw electrical symbol using software
	4/5/23	Draw D.C m/c Parts using software
13th (May 2023)	9/5/23	Draw D.C m/c Parts using software
	12/5/23	Draw A.C m/c parts using software
14th (May 2023)	16/5/23	Draw A.C m/c parts using software
	18/5/23	Draw Eletrical layout of Electrical installation of building
15th (May 2023)	19/5/23	Draw Eletrical layout of Electrical installation of building
	20/5/23	Draw Eletrical layout of Electrical installation of building

Swetaleena Dehury

LESSON PLAN 2023(Summer)		
Dicipline: ELECTRICAL	Semester :4th Sem	Name of the Teaching faculty: Sudhansu Sekhar Munda Lect in E &TC
Subject: Analog Electronics Circuit	No.of days/per week classalloted:4p/week	Semester From date: 14/02/2023 to Date: 23/05/2023 No . Of Weeks:15
Week	Class Day	Theory Topics
2nd week of feb	15.02.2023	**P-N JUNCTION DIODE:** 1.1P-N JUNCTION DIODE , 1 . 2 Working of Diode
	16.02.2023	1 . 3 V-I characteristic of PN junction Diode.
	17.02.2023	1 . 4 DC load line
3rd week of feb	20.02.2023	1 . 5 Important terms such as Ideal Diode, Knee voltage
	22.02.2023	1 . 6 Junctions break down. 1.6.1 Zener breakdown 1.6.2 Avalanche breakdown
	23.02.2023	1 . 7 P-N Diode clipping Circuit. 1 . 8 P-N Diode clamping Circuit
	24.02.2023	**SPECIAL SEMICONDUCTOR DEVICES**:2 . 1 Thermistors
4th week of feb	27.02.2023	Sensors & Barretters
	01.03.2023	2 . 2 Zener Diode
	02.03.2023	2 . 3 Tunnel Diode
	03.03.2023	2 . 4 PIN Diode
1st week of March	06.03.2023	**RECTIFIER CIRCUITS & FILTERS:** 3.1Classification of rectifiers
	09.03.2023	3.2 Analysis of half wave, full wave
	10.03.2023	Analysis of half wave centre tapped and Bridge rectifiers
2nd week of March	13.03.2023	3.2.1 Calculate DC output current and voltage
	14.03.2023	3.2.3 Rectifier efficiency
	16.03.2023	Filters: 3.3.1 Shunt capacitor filter
	17.03.2023	3.3.2 Choke input filter 3.3.3 π filter
3rd week of March	20.03.2023	**TRANSISTORS :** 4.1Principle of Bipolar junction transistor
	22.03.2023	4.2 Different modes of operation of transistor

	23.03.2023	4.3 Current components in a transistor 4.4 Transistor as an amplifier
	24.03.2023	4.5 Transistor circuit configuration & its characteristics
4th week of March	27.03.2023	4.5.1 CB Configuration
	29.03.2023	4.5.2 CE Configuration
	31.03.2023	4.5.3 CC Configuration
1st week of April	03.04.2023	**TRANSISTOR CIRCUITS:** 5.1 Transistor biasing
	05.04.2023	5.2 Stabilization
	06.04.2023	5.3 Stability factor
2nd week of April	10.04.2023	5.4 Different method of Transistors Biasing
	12.04.2023	5.4.1 Base resistor method
	13.04.2023	5.4.2 Collector to base bias
3rd week of April	17.04.2023	5.4.3 Self bias or voltage divider method
	19.04.2023	**TRANSISTOR AMPLIFIERS & OSCILLATORS:** 6.1 Practical circuit of transistor amplifier
	20.04.2023	6.2 DC load line and DC equivalent circuit
	21.04.2023	6.3 AC load line and AC equivalent circuit
4th week of April	24.04.2023	6.4 Calculation of gain 6.5 Phase reversal 6.6 H-parameters of transistors
	26.04.2023	6.7 Simplified H-parameters of transistors 6.8 Generalised approximate model
	27.04.2023	6.9 Analysis of CB, CE, CC amplifier using generalised approximate model
	28.04.2023	INTERNAL ASSESSMENT
	29.4.2023	INTERNAL ASSESSMENT

1st week of May	01.05.2023	6.10 Multi stage transistor amplifier6.10.1 R.C. coupled amplifier 6.10.2 Transformer coupled amplifier
	03.05.2023	6.11 Feed back in amplifier 6.11.1 General theory of feed back 6.11.2 Negative feedback circuit 6.11.3 Advantage of negative feed back
	04.05.2023	6.12 Power amplifier and its classification 6.12.1 Difference between voltage amplifier and power amplifier 6.12.2 Transformer coupled class A power amplifier 6.12.3 Class A push – pull amplifier 6.12.4 Class B push – pull amplifie
2nd week of May	08.05.2023	6.13 Oscillators 6.13.1 Types of oscillators 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)
	10.05.2023	**FIELD EFFECT TRANSISTOR:** 7.1 Classification of FET 7.2 Advantages of FET over BJT
	11.05.2023	7.3 Principle of operation of BJT 7.4 FET parameters (no mathematical derivation 7.4.1 DC drain resistance 7.4.2 AC drain resistance
	12.05.2023	7.4.3 Trans-conductance 7.5 Biasing of FET
3rd week of May	15.05.2023	**OPERATIONAL AMPLIFIERS:** 8.1 General circuit simple of OP-AMP and IC – CA – 741 OP AMP
	17.05.2023	8.2 Operational amplifier stages 8.3 Equivalent circuit of operational amplifier

	18.05.2023	8.4 Open loop OP-AMP configuration 8.5 OPAMP with fed back 8.6 Inverting OP-AMP 8.7 Non inverting OP-AMP
	19.05.2023	8.8 Voltage follower & buffer
4th week of May	22.05.2023	8.9 Differential amplifier 8.9.1 Adder or summing amplifier 8.9.2 Sub tractor 8.9.3 Integrator
	23.05.2023	8.9.4 Differentiator 8.9.5 Comparator

Sudhansu Sekhar Munda
Lect in Electronics

LESSON PALN 2023(SUMMER)			
Discipline: Electrical Engg.	Semester:4th Sem		Name of the Teaching Faculty: Mrs. Jayashree Mohanty,Sr. Lect. Electrical Engg
Subject: Energy Coversion-I	Theory Periods: 5P/Week		Semester From Date:-14.02.23 to Date:- 23.05.22 No. of Weeks:15
1st Week	14.02.23	1st	Operating principle of generator
	15.02.23	2nd	Constructional features of DC machine, Yoke, Pole & field winding, Armature, Commutator.
	16.02.23	3rd	Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch.
	17.02.23	4th	Simple Lap and wave winding, Dummy coils.
2nd Week	20.02.23	1st	Different types of D.C. machines (Shunt, Series and Compound)
	21.02.23	2nd	Derivation of EMF equation of DC generator.(Solve problems)
	22.02.23	3rd	Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems.
	23.02.23	4th	numerical problems
	24.02.23	5th	Armature reaction in D.C. machine.
3rd Week	27.02.23	1st	Commutation and methods of improving commutation.
	28.02.23	2nd	Role of inter poles and compensating winding in commutation.
	01.03.23	3rd	Characteristics of D.C. Generators.
	02.03.23	4th	Application of different types of D.C. Generator.
	03.03.23	5th	Concept of critical resistance and critical speed of DC shunt generator.
4th Week	06.03.23	1st	Conditions of Build-up of emf of DC generator.
	09.03.23	2nd	Parallel operation of D.C. Generators.
	10.03.23	3rd	Basic working principle of DC motor.
5th Week	13.03.23	1st	Significance of back emf in D.C. Motor.
	14.03.23	2nd	Voltage equation of D.C. Motor and condition for maximum power output (simple problems).
	15.03.23	3rd	Derive torque equation (solve problems).
	16.03.23	4th	Characteristics of shunt, series and compound motors and their application.
	17.03.23	5th	Starting method of shunt, series and compound motors.
6th Week	20.03.23	1st	Speed control of D.C shunt motors by Flux control method.
	21.03.23	2nd	Speed control of D.C shunt motors by Armature voltage method.
	22.03.23	3rd	Speed control of D.C. series motors by Field Flux control method.
	23.03.23	4th	Speed control of D.C. series motors by Tapped field method and series-parallel method.
	24.03.23	5th	Determination of efficiency of D.C. Machine by Brake test method (solve numerical problems).
7th Week	27.03.23	1st	Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems).
	28.03.23	2nd	Losses, efficiency and power stages of D.C. motor.
	29.03.23	3rd	(Solve numerical problems).
	31.03.23	4th	Uses of D.C. motors.

8th Week	03.04.23	1st	Working principle of transformer.
	04.04.23	2nd	Constructional feature of Transformer. Arrangement of core & winding in different types of transformer, Brief ideas about transformer accessories such as conservator, tank,
	05.04.23	3rd	Ideas about breather, and explosion vent etc. Explain types of cooling methods
	06.04.23	4th	State the procedures for Care and maintenance
9th Week	10.04.23	1st	EMF equation of transformer.
	11.04.23	2nd	Ideal transformer voltage transformation ratio.
	12.04.23	3rd	(Solve numerical problems).
	13.04.23	4th	Operation of Transformer at no load, on load with phasor diagrams.
10th Week	17.04.23	1st	Equivalent Resistance, Leakage Reactance and Impedance of transformer.
	18.04.23	2nd	To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load.
	19.04.23	3rd	To explain Equivalent circuit and solve numerical problems..
	20.04.23	4th	Approximate & exact voltage drop calculation of a Transformer.
	21.04.23	5th	Regulation of transformer.
11th Week	24.04.23	1st	Different types of losses in a Transformer. Explain Open circuit and Short Circuit test.
	25.04.23	2nd	(Solve numerical problems).
	26.04.23	3rd	Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency.
	27.04.23	4th	(Solve problems).
	28.04.23	5th	Explain All Day Efficiency (solve problems).
12th Week	01.05.23	1st	Determination of load corresponding to Maximum efficiency.
	02.05.23	2nd	Parallel operation of single phase transformer.
	03.05.23	3rd	Constructional features of Auto transformer. Working principle of single phase Auto Transformer.
	04.05.23	4th	Comparison of Auto transformer with a two winding transformer (saving of Copper).
13th Week	08.05.23	1st	Uses of Auto transformer. Explain Tap changer with transformer (on load and off load condition)
	09.05.23	2nd	Explain Current Transformer
	10.05.23	3rd	Potential Transformer
	11.05.23	4th	Define Ratio error
	12.05.23	5th	Phase angle error, Burden
14th Week	15.05.23	1st	Uses of C.T. and P.T
	16.05.23	2nd	Tutorial
	17.05.23	3rd	Tutorial
	18.05.23	4th	Tutorial
15th Week	22.05.23	1st	Tutorial
	23.05.23	2nd	Tutorial

Prabhat (Sn. Lect-Elect)

LESSON PALN 2023(SUMMER)		
Dicipline: ELECTRICAL ENGG.	Semester :4th Sem	Name of the Teaching faculty: Swetaleena Dehury
Subject: EM & I	No.of days/per week classalloted:5p(55Minutes)/week	Semester From date: 14 feb 2023 to Date : 23 May 2023 No . Of Weeks:15
Week	Class/Date	Theory Topics
1st (Feb-2023)	14/2/23	Define Accuracy,Precision,Error,Resolution, Senistivity & tolerance
	15/2/23	Classification of Measuring Instrument
	15/2/23	Explain Deflecting,controlling & Damping torque in instrument.
	16/2/23	Calibration of Instrument
	17/2/23	Tutorial classes
2nd(Feb-2023)	20/2/23	Analog Ammeter And Voltmeter
	21/2/23	Explain Moving Iron Type Instrument
	22/2/23	Permanent Magnent Moving Coil Type instrument
	22/2/23	Merits Demerits and error of Pmmc and Mi type instrument
	23/2/23	Tutorial classes
3rd(Feb/March-2023)	27/2/23	Dynamometer Type Instrument
	28/2/23	Rectifier Type Instrument
	1/3/23	Induction Type Instrument
	1/3/23	Tutorial classes
	2/3/23	class test
4th (March-2023)	6/3/23	Extend the range of instrument by use of shunt & multipliers
	9/3/23	solve numerical
	13/3/23	Tutorial classes
	14/3/23	Wattmeter and measurement of power
	15/3/23	Dynamometer Type wattmeter
5th(March-2023)	15/3/23	LPF type, UPF type
	16/3/23	Error in dynamometer type wattmeter & method of their correction
	20/3/23	Induction Type Instrument
	21/3/23	Induction of energy meter & measurement of energy
	22/3/23	Tutorial classes
6th (March 2023)	22/3/23	1phase induction type energy meter and their Compensation & Adjustment
	23/3/23	Testing of Energy meter
	24/3/23	Explain Tachometer
	27/3/23	Mechanical & Electrical resonance type frequency meter
7th (March/April-2023)	28/3/23	Tutorial classes
	29/3/23	Classification of Resistance
	3/4/23	Measurement of low resistance by potentiometer method
	4/4/23	measurement of medium resistance by wheat stone bridge method

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29/3/23

8th (April-2023)	5/4/23	Measurement of high resistance by loss of charge method
	6/4/23	Tutorial classes
	10/4/23	Explain Megger,Earth Tester
	11/4/23	Construction & principle of Multimeter
	12/4/23	Internal
9th (April-2023)	12/4/23	Internal
	13/4/23	Tutorial classes
	17/4/23	Measurement of inductance by maxwell's bridge method
	18/4/23	Measurement of capacitance by schering bridge method
	19/4/23	Sensor & Transducer
10th (April-2023)	19/4/23	Define Transducer,sensing element or detector element & transduction element
	20/4/23	Tutorial classes
	24/4/23	Classify Transducer
	24/4/23	Example of various class of Ttansducer
	25/4/23	Resistive Transducer and it's type
	26/4/23	Thermistor and resistance thermometer
11th (April/May-2023)	26/4/23	Tutorial classes
	27/4/23	Linear & angular motion potentiometer
	1/5/23	wire resistance strain gauge
	2/5/23	Inductive Transducer
	3/5/23	Explain LVDT
12th (May-2023)	3/5/23	Tutorial classes
	4/5/23	Capacitive Transducer
	8/5/23	Variable area capacitive Transducer
	9/5/23	change in distance between plate capacitive transducer
13th (May 2023)	10/5/23	Piezo Electric transducer
	10/5/23	Tutorial classes
	11/5/23	Hall Effect & its application
	15/5/23	class test
	16/5/23	Introduction to Oscilloscope
14th (May 2023)	16/5/23	Principle operation of CRT
	17/5/23	Tutorial classes
	18/5/23	Principle operation of CRO
	18/5/23	CRO
	19/5/23	measurement of DC Current
15th (May 2023)	19/5/23	measurement of dc voltage
	22/5/23	Tutorial classes
	22/5/23	Measurement of Ac volatge
	23/5/23	measurent of AC current
	23/5/23	measurement of phase , FREQUENCY

Swetaleena Dehury

LESSON PALN 2023(SUMMER)		
Dicipline: ELECTRICAL ENGG.	Semester :6th Sem	Name of the Teaching faculty: Swetaleena Dehury
Subject: Renewable Energy	No.of days/per week classalloted:5p(55Minutes)/week	Semester From date: 14 feb 2023 to Date: 23 May 2023 No . Of Weeks:15
Week	Class/ Date	Theory Topics
1st (Feb- 2023)	15/2/23	Introduction to Renewable Energy
	15/2/23	Environmental consequences of fossil fuel uses
	16/2/23	Importance of RE of energy
	17/2/23	sustainable design and development
	17/2/23	tutorial classes
2nd (Feb -2023)	20/2/23	Types of RE sources
	22/2/23	Limitation of RE sources
	23/2/23	present india & international energy scenerio of conventional & RE sources
	24/2/23	tutorial classes
	24/2/23	Introduction to Solar Energy
3rd (Feb/March-2023)	27/2/23	Solar PV system operating principle
	1/3/23	PV cell concept- Cell,Module,array
	2/3/23	series & parallel connection,MPPT
	3/3/23	classification of energy sources
	3/3/23	tutorial classes
4th (March-2023)	6/3/23	Extraterrestrial and terrestrial Radiation
	9/3/23	Azimuth angle,zenith angle,Hour Angle,Irradiance,Solar Constant
	10/3/23	Solar collectors,Types and characteristics
	10/3/23	Applications- PV-Battery charger, domestic application,street lighting
	13/3/23	tutorial classes
5th (March-2023)	14/3/23	Applications- PV-water pumping,solar cooker,solar pond
	15/3/23	Introduction to Wind Energy
	16/3/23	wind energy conversion
	17/3/23	types of wind turbines
	17/3/23	tutorial classes
6th (March-2023)	20/3/23	Aerodynamic of wind turbines
	22/3/23	wind turbine control system
	23/3/23	conversion to electrical power
	24/3/23	induction & synchronous generator
	24/3/23	tutorial classes
7th (March-2023)	27/3/23	grid connected & self excited induction generator operation
	28/3/23	constant voltage & constant frequency generator with power electronics control
	29/3/23	single and double output system
	31/3/23	characteristics of wind power plant
	31/3/23	internal

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8th (April-2023)	3/4/23	internal
	5/4/23	Introduction to Biomass Power
	6/4/23	Energy from biomass
	7/4/23	biomass as renewable energy sources
	8/4/23	tutorial classes
9th (April-2023)	10/4/23	Types of biomass fuels
	12/4/23	solid,liquid, Gas Fuels
	13/4/23	combustion
	13/4/23	fermentation
	17/4/23	tutorial classes
10th (April-2023)	19/4/23	Anaerobic digestion
	20/4/23	Anaerobic digestion
	21/4/23	types of biogas digester
	21/4/23	wood gassifier
	24/4/23	tutorial classes
11th (April-2023)	24/4/23	pyrolysis
	26/4/23	application of biogas
	27/4/23	application of biodiesel
	28/4/23	tutorial classes
	28/4/23	class test
12th (May 2023)	1/5/23	Introduction to Tidal Energy
	3/5/23	Energy from tidal
	4/5/23	Barrage & Non Barrage Tidal Power system
	5/5/23	OTEC
	5/5/23	tutorial classes
13th (May 2023)	8/5/23	Geothermal Energy
	10/5/23	Classification of geo thermal energy
	11/5/23	Hybrid energy system
	12/5/23	Need for Hybrid System
	12/5/23	tutorial classes
14th (May 2023)	15/5/23	Diesel pv system
	16/5/23	wind pv system
	17/5/23	microhydel pv system
	18/5/23	tutorial classes
	19/5/23	tutorial classes
15th (May- 2023)	19/5/23	Introduction to electric vehicles
	22/5/23	Types of Electric Vehicles
	22/5/23	Hybrid electric vehicles
	23/5/23	tutorial classes
	23/5/23	tutorial classes

Swetaleena Dehury

LESSON PLAN 2023(Summer)

Dicipline: ELECTRICAL	Semester :6th Sem	Name of the Teaching faculty: Sudhansu Sekhar Munda Lect in E &TC
Subject:Contol Sysyem .	No.of days/per week classalloted:5p(55Minutes)/week	Semester From date: 14/02/2023 to Date: 23/05/2023 No . Of Weeks: 15
2nd week of feb	14.02.2023	**FUNDAMENTAL OF CONTROL SYSTEM** : 1.1. Classification of Control system
	15.02.2023	1.2. Open loop system & Closed loop system and its comparison
	16.02.2023	1.3. Effects of Feed back
	17.02.2023	1.4. Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)
	18.02.2023	1.5. Servomechanism
3rd week of Feb	21.02.2023	**2. MATHEMATICAL MODEL OF A SYSTEM:** 2.1. Transfer Function & Impulse response
	22.02.2023	2.2. Properties, Advantages & Disadvantages of Transfer Function
	23.02.2023	2.3. Poles & Zeroes of transfer Function
	24.02.2023	2.4. Simple problems of transfer function of network.
	25.02.2023	2.5. Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)
4th week of Feb	28.02.2023	**3. CONTROL SYSTEM COMPONENTS:** 3.1. Components of Control System
	01.03.2023	3.2. Gyroscope, Synchros, Tachometer.
	02.03.2023	DC servomotors, Ac Servomotors
	03.03.2023	**4. BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS:**
	04.03.2023	4.1. Definition: Basic Elements of Block Diagram
1st week of March	06.03.2023	4.2. Canonical Form of Closed loop Systems
	09.03.2023	4.3. Rules for Block diagram reduction
	10.03.2023	4.4. Procedure for of Reduction of Block Diagram
	11.03.2023	4.5. Simple Problem for equivalent transfer function
2nd week of March	14.03.2023	4.6. Basic Definition in Signal Flow Graph & properties
	15.03.2023	4.7. Construction of Signal Flow graph from Block diagram
	16.03.2023	4.8. Mason's Gain formula
	17.03.2023	4.9. Simple problems in Signal flow graph for network
	18.03.2023	5. TIME RESPONSE ANALYSIS.
	21.03.2023	5 . 1 Time response of control system.

3rd week of March	22.03.2023	5 . 2 Standard Test signal.
	23.03.2023	5.2.1. Step signal,
	24.03.2023	5.2.2. Ramp Signal
	25.03.2023	5.2.3. Parabolic Signal
4th week of March	28.03.2023	5.2.4. Impulse Signal
	29.03.2023	5 . 3 Time Response of first order system with
	31.03.2023	5.3.1. Unit step response
1st week of April	04.04.2023	5.3.2. Unit impulse response.
	05.04.2023	5 . 4 Time response of second order system to the unit step input.
	06.04.2023	5.4.1. Time response specification.
	08.04.2023	5.4.2. Derivation of expression for rise time, peak time, peak overshoot,settling time and steady state error.
2nd week of April	11.04.2023	
	12.04.2023	5 . 5 Types of control system.[Steady state errors in Type-0, system]
	13.04.2023	5 . 5 Types of control system.[Steady state errors in Type-1 system]
	15.04.2023	5 . 5 Types of control system.[Steady state errors in Type-2 system]
3rd week of April	18.04.2023	5 . 6 Effect of adding poles and zero to transfer function.
	19.04.2023	5 . 7 Response with P, PI, PD and PID controller.
	20.04.2023	5 . 7 Response with P, PI, PD and PID controller.
	21.04.2023	6. ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE. 6 . 1 Root locus concept.
4th week of April	25.04.2023	6. ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE. 6 . 1 Root locus concept.
	26.04.2023	6 . 2 Construction of root loci.
	27.04.2023	6 . 2 Construction of root loci.
	28.04.2023	INTERNAL ASSESSMENT
	29.04.2023	INTERNAL ASSESSMENT
1st week of May	02.05.2023	6 . 3 Rules for construction of the root locus.
	03.05.2023	6 . 4 Effect of adding poles and zeros to G(s) and H(s).
	04.05.2023	7. FREQUENCY RESPONSE ANALYSIS. 7 . 1 Correlation between time response and frequency response.
	06.05.2023	7 . 2 Polar plots.
2nd week of May	09.05.2023	7 . 3 Bode plots
	10.05.2023	7 . 4 All pass and minimum phase system.
	11.05.2023	7 . 5 Computation of Gain margin and phase margin
	12.05.2023	7 . 6 Log magnitude versus phase plot.
	13.05.2023	8. NYQUIST PLOT 8.1 Principle of argument.
3rd week of May	16.05.2023	8.2 Nyquist stability criterion.
	17.05.2023	8.3 Niquist stability criterion applied to inverse polar plot
	18.05.2023	8.4 Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot.
	19.05.2023	8.5 Assessment of relative stability.
	20.05.2023	8.6 Constant M and N circle

4th week of May	23.05.2023	8.7 Nicholas chart.

Sudhansu Sekhar Munda
Lect in Electronics

LESSON PALN 2023(SUMMER)

Discipline: Electrical Engg.		Semester: 6th Sem	Name of the Teaching Faculty: Mrs. Jayashree Mohanty, Sr. Lect. Electrical Engg
Subject: ELECTRICAL INSTALLATION AND ESTIMATING		Theory periods: 5P/Week	Semester From Date:-14.02.23 to Date:-23.05.23 No. of Weeks:15
1st Week	14.02.23	1st	INDIAN ELECTRICITY RULES: Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker,conductor voltage (low, medium, high, EH), live, dead, cut-out.
	15.02.23	2nd	conduit, system, danger, Installation, earthing system, span, volt, switch gear, etc.
	17.02.23	3rd	General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
2nd Week	20.02.23	1st	General conditions relating to supply and use of energy: rule 47, 48, 49, 50, 51, 54, 55, 56, 57, 58, and 59.
	21.02.23	2nd	Rule 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
	22.02.23	3rd	OH lines: Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91.
	24.02.23	4th	ELECTRICAL INSTALLATIONS: Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring.
	25.02.23	5th	Systems of wiring.
3rd Week	27.02.23	1st	Wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	28.02.23	2nd	Wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	01.03.23	3rd	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
	03.03.23	4th	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
	04.03.23	5th	Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings.
4th Week	06.03.23	1st	Fuses, important definitions, determination of size of fuse – wire, fuse units.
	10.03.23	2nd	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed.
	11.03.23	3rd	Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.
5th Week	13.02.23	1st	Aspects of good lighting services. Types of lighting schemes.
	14.03.23	2nd	Design of lighting schemes, factory lighting.
	15.03.23	3rd	Public lighting installations, street lighting.
	17.03.23	4th	General rules for wiring, determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits.
	18.03.23	5th	INTERNAL WIRING: Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages comparison and applications.

6th Week	20.03.23	1st	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan & plug points. Calculation of current, circuit diagram. Calculation of phase wire.
	21.03.23	2nd	Calculation of Neutral wire and quantity of material required.
	22.03.23	3rd	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points. Calculation of current, circuit diagram.
	24.03.23	4th	Calculation of phase wire.
	25.03.23	5th	Calculation of Neutral wire and quantity of material required.
7th Week	27.03.23	1st	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points. Calculation of current, circuit diagram.
	28.03.23	2nd	Calculation of phase wire.
	29.03.23	3rd	Calculation of Neutral wire and quantity of material required.
	31.03.23	4th	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW. Calculation of current, circuit diagram.
8th Week	03.04.23	1st	Calculation of phase wire.
	04.04.23	2nd	Calculation of Neutral and earth wire and specifications of quantity of material required.
	05.04.23	3rd	Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line.
9th Week	10.04.23	1st	Cross arms, pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths, overhead line insulators, types of insulators.
	11.04.23	2nd	Lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.
	12.04.23	3rd	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	15.04.23	4th	Overhead transmission line diagram, specifications of quantity of material required.

10th Week	17.04.23	1st	Specifications of quantity of material required.
	18.04.23	2nd	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	19.04.23	3rd	Overhead transmission line diagram, specifications of quantity of material required.
	21.04.23	4th	Specifications of quantity of material required.
	22.04.23	5th	Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR.
11th Week	24.04.23	1st	Overhead transmission line diagram, specifications of quantity of material required.
	25.04.23	2nd	Specifications of quantity of material required.
	26.04.23	3rd	OVER HEAD SERVICE LINES: Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.
	28.04.23	4th	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building. Service line diagram, Calculation of current, main switch etc.
	29.04.23	5th	Specifications of quantity of material required.
12th Week	01.05.23	1st	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter. Service line diagram. Calculation of current, main switch etc.
	02.05.23	2nd	Specifications of quantity of material required.
	03.05.23	3rd	Specifications of quantity of material required.
	06.05.23	4th	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire. Calculation of current, main switch etc.
13th Week	08.05.23	1st	Specifications of quantity of material required.
	09.05.23	2nd	Specifications of quantity of material required.
	10.05.23	3rd	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined. Calculation of current, main switch etc.
	12.05.23	4th	ESTIMATING FOR DISTRIBUTION SUBSTATIONS: Prepare one materials estimate for following types of transformer substations, Pole mounted substation introduction.
	13.05.23	5th	Diagram, calculation and specifications of quantity of material required.
14th Week	15.05.23	1st	Specifications of quantity of material required.
	16.05.23	2nd	Plinth Mounted substation. Introduction.
	17.05.23	3rd	Diagram, calculation and specifications of quantity of material required.
	20.05.23	4th	Specifications of quantity of material required.
15th Week	22.05.23	1st	Tutorial.
	23.05.23	2nd	Tutorial.

Discipline: **ELECTRICAL**	Semester:**6TH**	Name of the Teaching Faculty: MONALISA PANI
Subject:**ELECTRICAL WORKS PRACTICE**	No. of Days/per week class allotted:4P (3 Hour Each)=12P	Semester From Date: 14-02-2023To Date:23-05-2023 No. of Weeks: **15**
Week	Class Day	Theory/Practical Topics
1st	01	Identification of single core (SC), twin core (TC), three cores (3c), four cores (4c); copper and aluminum PVC, VIR & Weather proof (WP) wire.
	02	Prepare Britannia T- joint.
	03	Prepare Married joint.
2nd	01	Cutting copper and aluminum cable and crimping lug to them from 4mm2 to 25mm2, cross section.
	02	Cutting copper and aluminum cable and crimping lug to them from 4mm2 to 25mm2, cross section.
	03	Cutting copper and aluminum cable and crimping lug to them from 4mm2 to 25mm2, cross section.
3rd	01	Connection and testing of fluorescent tube light– measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
	02	Connection and testing of high pressure M.V. lamp– measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
	03	Connection and testing of sodium vapor lamp– measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
4th	01	Connection and testing of M.H lamp – measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
	02	Connection and testing of CFL – measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
	03	Connection and testing of and latest model lamps – measure inductance, Lux/ lumens (intensity of illumination) in each case-prepare lux table .
5th	01	Study battery charger and make charging of lead acid battery (record charging voltage, current and specific gravity)
	02	Study battery charger and make charging of lead acid battery (record charging voltage, current and specific gravity)
	03	Study battery charger and make charging of lead acid battery (record charging voltage, current and specific gravity)
6th	01	Erection of residential building wiring by CTS wiring system using main two points

	02	Erection of residential building wiring by conduit wiring system using main two points.
	03	Test wiring installation by test lamp method and a meggar.
7th	01	Fault finding & repairing of Fan – prepare an inventory list of parts.
	02	Fault finding & repairing of Fan – prepare an inventory list of parts.
	03	Fault finding & repairing of Fan – prepare an inventory list of parts.
8th	01	Find out fault of D.C. generator, repair and test it to run.
	02	Find out fault of D.C. generator, repair and test it to run.
	03	Find out fault of D.C. generator, repair and test it to run.
9th	01	Find out fault of D.C. motor starters.
	02	Find out fault of A.C motor starters.
	03	Prepare an inventory list of parts used in different starters.
10th	01	Use crimping tools to lug sockets on L.T. & H.T aluminum cable from 10mm2 to 50mm2.
	02	Use crimping tools to lug sockets on L.T. & H.T aluminum cable from 10mm2 to 50mm2.
	03	Use crimping tools to lug sockets on L.T. & H.T aluminum cable from 10mm2 to 50mm2.
11th	01	Dismantle, over haul and assemble a single phase induction motor. Test and run it. – prepare an inventory list.
	02	Dismantle, over haul and assemble a single phase induction motor. Test and run it. – prepare an inventory list.
	03	Dismantle, over haul and assemble a single phase induction motor. Test and run it. – prepare an inventory list.
12th	01	Dismantle over haul and assemble a three phase squirrel cage and phase wound motor. Test and run them.
	02	Dismantle over haul and assemble a three phase squirrel cage and phase wound motor. Test and run them.
	03	Dismantle over haul and assemble a three phase squirrel cage and phase wound motor. Test and run them.
13th	01	Overhaul a single phase / 3 phase variac.
	02	Overhaul a single phase / 3 phase variac.
	03	Overhaul a single phase / 3 phase variac.
14th	01	Practice of all previous experiment.

	02	Practice of all previous experiment.
	03	Practice of all previous experiment.
15th	01	Practice of all previous experiment.
	02	Practice of all previous experiment.
	03	Practice of all previous experiment.
	04	

N Pawd
14/02/23
(Lecturer, Electrical)

Signature of Teaching Faculty

Discipline: ELECTRICAL	Semester: 6TH	Name of the Teaching Faculty: **MONALISA PANI** **Lecturer in electrical**
Subject: **SGPD**	No. of Days/per week class allotted:05	Semester From Date: 14-02-2023 To Date:23-05-2023 No. of Weeks:15
Week	**Class Day**	**Theory/Practical Topics**
1st	14.02.2023	Introduction to switchgear. Essential Features of switchgear.
(FEB 2023)	15.02.2023	Switchgear Equipments
	16.02.2023	Bus-Bar Arrangements.
	17.02.2023	Switchgear Accommodation.
	20.02.2023	Revision tutorial
2nd	21.02.2023	Short Circuit.
(FEB 2023)	22.02.2023	Faults in a power system.
	23.02.2023	Symmetrical faults on 3-phase system
	24.02.2023	Limitation of fault current.
	25.02.2023	Revision tutorial
3rd	27.02.2023	Percentage Reactance.
(FEB 2023)	28.02.2023	Percentage Reactance and Base KVA.
	01.03.2023	Short – circuit KVA.
	02.03.2023	Reactor control of short circuit currents
	03.03.2023	Revision tutorial
4th	06.03.2023	Location of reactors.
(MARCH2023)	09.03.2023	Steps for symmetrical Fault calculations
	10.03.2023	Solve numerical problems on symmetrical fault.
	11.03.2023	Solve numerical problems on symmetrical fault.
	13.03.2023	Desirable characteristics of fuse element.
5th	14.03.2023	Fuse Element materials.
(MARCH2023)	15.03.2023	Types of Fuses and important terms used for fuses.
	16.03.2023	Low and High voltage fuses
	17.03.2023	Revision tutorial
	18.03.2023	Current carrying capacity of fuse element
6th	20.03.2023	Difference Between a Fuse and Circuit Breaker.
(MARCH2023)	21.03.2023	Definition and principle of Circuit Breaker. Arc phenomenon and principle of Arc Extinction.
	22.03.2023	Methods of Arc Extinction. Definitions of Arc voltage, Re-striking voltage, and Recovery voltage.
	23.03.2023	Revision tutorial
	24.03.2023	Classification of circuit Breakers. Oil circuit Breaker and its classification.
7th	25.03.2023	Plain brake oil circuit breaker. Arc control oil circuit breaker.
(MARCH2023)	27.03.2023	Low oil circuit breaker. Maintenance of oil circuit breaker.
	28.03.2023	Air-Blast circuit breaker and its classification.
	29.03.2023	Class-Test-I
	31.03.2023	Sulphur Hexa-fluoride (SF6) circuit breaker.
8th	03.04.2023	Vacuum circuit breakers.
	04.04.2023	Switchgear component. Problems of circuit interruption.
(APRIL 2023)	05.04.2023	Resistance switching. Circuit Breaker Rating.

Signature of Teaching Faculty

	06.04.2023	Revision tutorial
	08.04.2023	Definition of Protective Relay. Fundamental requirement of protective relay.
9th	10.04.2023	Basic Relay operation Electromagnetic Attraction type Induction type.
(APRIL 2023)	11.04.2023	Definition of following important terms. Pick-up current. Current setting. Plug setting Multiplier. Time setting Multiplier
	12.04.2023	Classification of functional relays, Induction type over current relay (Non-directional)
	13.04.2023	Revision tutorial
	15.04.2023	Induction type directional power relay
10th	17.04.2023	Induction type directional over current relay
(APRIL 2023)	18.04.2023	Differential relay Current differential relay Voltage balance differential relay.
	19.04.2023	Types of protection
	20.04.2023	Revision tutorial
	21.04.2023	Protection of alternator. Differential protection of alternators.
11th	22.04.2023	Balanced earth fault protection.
(APRIL 2023)	24.04.2023	Protection systems for transformer,Buchholz relay
	25.04.2023	Protection of Bus bar. Protection of Transmission line
	26.04.2023	Revision tutorial
	27.04.2023	Different pilot wire protection (Merz-price voltage Balance system)
12th	28.04.2023	**Internal Assessment**
(APRIL 2023)	29.04.2023	Explain protection of feeder by over current and earth fault relay.
	01.05.2023	Voltage surge and causes of over voltage.
	02.05.2023	Internal cause of over voltage.
	03.05.2023	Class-Test-II
13th	04.05.2023	External cause of over voltage (lighting)
(MAY 2023)	06.05.2023	Mechanism of lightning discharge.
	08.05.2023	Types of lightning strokes.
	09.05.2023	Harmful effect of lightning
	10.05.2023	Revision tutorial
14th	11.05.2023	Lightning arresters and Type of lightning Arresters. Rod-gap lightning arrester. Horn-gap arrester. Valve type arrester.
(MAY 2023)	12.05.2023	Surge Absorber
	13.05.2023	Static relays.
	15.05.2023	Advantage of static relay.
	16.05.2023	Revision tutorial
15th	17.05.2023	Instantaneous over current relay.
(MAY 2023)	18.05.2023	Instantaneous over current relay.
	20.05.2023	Principle of IDMT relay.
	22.05.2023	Principle of IDMT relay.
	23.05.2023	Revision tutorial

14/02/23
(Lecturer, Electrical)
Signature of Teaching Faculty

ACADEMIC LESSON PLAN OF SUMMER 2023

Discipline: ELECTRICAL ENGINEERING	Semester: 4th Sem	Name of the Teaching Faculty: **MONALISA PANI** **LECTURER IN ELECTRICAL**
Subject:**GENERATION TRANSMISSION AND DISTRIBUTION**	No. of days/per week class allotted:4p /week	Semester From: 14/02/2023 To: 23/05/2023 No. of weeks: 15 weeks

Week	Class Day	Theory Topics
1st (FEB 2023)	14.02.2023	**GENERATION OF ELECTRICITY** Elementary idea on generation of electricity from Thermal Power station
	15.02.2023	Elementary idea on generation of electricity from Hydel Power station
	16.02.2023	Elementary idea on generation of electricity from Nuclear Power station.
	17.02.2023	Introduction to Solar Power Plant (Photovoltaic cells).
2nd (FEB 2023)	21.02.2023	Introduction to Solar Power Plant (Photovoltaic cells).
	22.02.2023	Layout diagram of generating stations.
	23.02.2023	Layout diagram of generating stations.
	24.02.2023	**TRANSMISSION OF ELECTRIC POWER** Layout of transmission and distribution scheme.
3rd (FEB 2023)	25.02.2023	Voltage Regulation & efficiency of transmission.
	27.02.2023	Kelvin's law for economical size of conductor.
	28.02.2023	Kelvin's law for economical size of conductor.
	02.03.2023	Corona and corona loss on transmission lines.
4th (MARCH 2023)	03.03.2023	**OVER HEAD LINES** Types of supports, size and spacing of conductor.
	04.03.2023	Types of conductor materials.
	09.03.2023	Types of insulator cross arms
	10.03.2023	Sag in overhead line with support at same level and different level.
5th (MARCH 2023)	11.03.2023	Simple problem on sag.
	14.03.2023	Simple problem on sag.
	16.03.2023	Numericals
	17.03.2023	**PERFORMANCE OF SHORT & MEDIUM LINES** Calculation of regulation and efficiency.
6th (MARCH 2023)	18.03.2023	Calculation of regulation and efficiency.
	21.03.2023	Calculation of regulation and efficiency.
	23.03.2023	Calculation of regulation and efficiency.
	24.03.2023	Calculation of regulation and efficiency.
7th (MARCH 2023)	25.03.2023	Class-Test-I
	28.03.2023	**EHV TRANSMISSION** EHV AC transmission.
	31.03.2023	Reasons for adoption of EHV AC transmission
	03.04.2023	Problems involved in EHV transmission.
8th (APRIL 2023)	04.04.2023	HV DC transmission
	05.04.2023	HV DC transmission
	06.04.2023	Advantages and Limitations of HVDC transmission system.
	08.04.2023	Advantages and Limitations of HVDC transmission system.
9th (APRIL 2023)	10.04.2023	**DISTRIBUTION SYSTEMS** Introduction to Distribution System.
	11.04.2023	Connection Schemes of Distribution System: (Radial, Ring Main and Inter connected system)
	12.04.2023	DC distributions. Distributor fed at one End.
	13.04.2023	Distributor fed at both the ends
10th	15.04.2023	Ring distributors.

(APRIL 2023)	18.04.2023	AC distribution system. Method of solving AC distribution problem.
	20.04.2023	Three phase four wire star connected system arrangement.
	21.04.2023	**UNDERGROUND CABLES** Cable insulation and classification of cables.
11th (APRIL 2023)	22.04.2023	Types of L. T. & H.T. cables with constructional features.
	24.04.2023	Methods of cable lying.
	25.04.2023	Localization of cable faults: Murray and Varley loop test for short circuit fault / Earth fault.
	26.04.2023	Localization of cable faults: Murray and Varley loop test for short circuit fault / Earth fault.
12th (APRIL 2023)	27.04.2023	Localization of cable faults: Murray and Varley loop test for short circuit fault / Earth fault.
	28.04.2023	**Internal Assessment**
	29.04.2023	**ECONOMIC ASPECTS** Causes of low power factor and methods of improvement of power factor in power system.
	01.05.2023	Class-Test-II
13th (MAY 2023)	02.05.2023	Revision
	03.05.2023	Factors affecting the economics of generation: (Define and explain) Load curves. Demand factor. Maximum demand.
	04.05.2023	Load factor. Diversity factor. Plant capacity factor.
	06.05.2023	Peak load and Base load on power station.
14th (MAY 2023)	09.05.2023	**TYPES OF TARIFF** Desirable characteristic of a tariff
	11.05.2023	Explain flat rate tarrif block rate tarrif
	12.05.2023	two part and maximum demand tariff.
	13.05.2023	**SUBSTATION** Layout of LT, HT and EHT substation.
15th (MAY 2023)	16.05.2023	Earthing of Substation, transmission and distribution lines.
	18.05.2023	Earthing of Substation, transmission and distribution lines.
	20.05.2023	Earthing of Substation, transmission and distribution lines.
	23.05.2023	Revision

A Paul
11/08/23
(Lecturer, Electrical)

Signature of Teaching Faculty