Lesson Plan

	Discipline: ETC	Semester-3rd Winter2023	NAME OF THE FACULTY:Priyanka Dhal(PTGF, ETC)
Sl. No.	Subject-Th.2.(CIRCUIT THEORY)	No. Of Days/Week class alloted:04	Semester From date: 01.08.2023 To date: 30.11.2023 No of weeks: 17
	Weeks/Months	Class Day	Topic
1	1st week Aug to 5th week Aug	1st	Unit-1: CIRCUIT ELEMENTS& ENERGY SOURCES.
		2nd	1.1 Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize.
		3rd	1.2 Voltage Division & Current Division, Energy Sources
		4th	1.3 Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active& Passive Elements.
2	2nd week 7th Aug to 12th Aug	1st	1.4 Energy Sources, Current and voltage sources and their transformation & mutual inductance.
		2nd	1.5 Star – Delta transformation.
		3rd	Unit-2: NETWORK THEOREMS
		4th	2.1 Nodal & Mesh Analysis of Electrical Circuits with simple problem.
3	3rd Week 14th aug to 19th Aug	1st	2.2 Thevenin's Theorem, Norton's Theorem, Maximum Power transfer Theorem, Superposition Theorem, Millman Theorem, Reciprocity Theorem- Statement, Explanation & applications.
		2nd	2.3 Solve numerical problems of above.
		3rd	Unit-3:Power Relation in AC circuits & Transient Response of passive circuits.
		4th	3.1 Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave.
4	4th week 21th Aug to 26th Aug	1st	3.2 Phasor representation of alternating quantities
		2nd	3.2 Phasor representation of alternating quantities .
		3rd	3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor.
		4th	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle .

5	5th week 28th Aug to 2nd Sept	1st	3.5 Define Time Constant of the above Circuit.	
		2nd	3.6 Solve numerical simple problems of above Circuit.	
		3rd	Unit-4:RESONANCE AND COUPLED CIRCUITS.	
		4th	4.1 Introduction to resonance circuits & Resonance tuned circuit,.	
6	1st week 4th Sept to 9th sept	1st	4.2 Series& Parallel resonance	
		3rd	4.3 Expression for series resonance, Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor and Power Factor of Resonance, Bandwidth in term of Q..	
		3rd	4.3 Expression for series resonance, Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor and Power Factor of Resonance, Bandwidth in term of Q.	
		4th	4.4 Parallel Resonance (RL, RC& RLC)& derive the expression.	
7	2nd week 11th sept to 16th sept.	1st	4.5 Comparisons of Series & Parallel resonance& applications	
		2nd	4.6 simple problems of above Circuit.	
		3rd	Unit-5: LAPLACE TRANSFORM AND ITS APPLICATIONS.	
		4th	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C &R-L-C.	
8	3rd week 18th sept. to 23rd sept	1st	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, R C, R.	
		2nd	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, R C, R.	
		3rd	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, R C, R.	
		4th	Unit-6: Two Port Network Analysis.	
9	4th week 25th Sept to 30th sept	1st	6.1 Network elements, ports in Network (One port, two port),	
		2nd	6.1 Network elements, ports in Network (One port, two port),	
		3rd	6.1 Network elements, ports in Network (One port, two port),	
		4th	6.2 Network Configurations (T & pie).	
		1st	6.2 Network Configurations (T & pie).	
		2nd	6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion	

10	1st week 02nd oct. to 07th oct	3rd	6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion
		4th	6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion
11	2nd week 9th oct. to 14th oct	1st	6.4 h- parameter (hybrid parameter) Representation
		2nd	6.4 h- parameter (hybrid parameter) Representation
		3rd	6.4 h- parameter (hybrid parameter) Representation
		4th	.6.5 Define T-Network & pie – Network
12	3rd week 16th oct to 20th oct.	1st	6.5 Define T-Network & pie – Network
		2nd	6.5 Define T-Network & pie – Network
		3rd	Unit-7: FILTERS& ATTENUATORS.
		4th	7.1 Ideal &Practical filters and its applications, cut off frequency, passband and stop band.
13	1st week 30th oct. to 04th Nov	1st	7.1 Ideal &Practical filters and its applications, cut off frequency, passband and stop band.
		2nd	7.1 Ideal &Practical filters and its applications, cut off frequency, passband and stop band.
		3rd	7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.
		4th	7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.
14	2nd week 6th Nov to 11th Nov	1st	7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.
		2nd	7.3 Butterworth Filter Design
		3rd	7.3 Butterworth Filter Design
		4th	7.4 Attenuation and Gain, Bel , Decibel & neper and their relations
15	3rd week 13th Nov to 18th Nov	1st	7.4 Attenuation and Gain, Bel , Decibel & neper and their relations
		2nd	7.4 Attenuation and Gain, Bel , Decibel & neper and their relations
		3rd	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators
		4th	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators
	4th week 20th Nov to 25th	1st	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators
		2nd	2.3 Solve numerical problems of above.

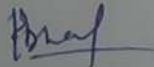| 16	Nov		
		3rd	3.5 Define Time Constant of the above Circuit 3.6 Solve numerical simple problems of above Circuit
		4th	3.5 Define Time Constant of the above Circuit 3.6 Solve numerical simple problems of above Circuit
17	5th week 27th Nov to 30th Nov	1st	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators
		2nd	2.3 Solve numerical problems of above.
		3rd	2.3 Solve numerical problems of above.
		4th	2.3 Solve numerical problems of above.

Signature of the Teacher

Lesson Plan

Discipline: ETC	Semester-5th Winter-2023	Name of the Teachng Faculty: Smt.Priyanka Dhal(PTGF. ETC Engg)	
SI. No.	Subject-Th.I_7 (Wave propagation & Broadband communication engg.)	No. Of Days/Week class alloted:04	Semester From date: 01.08.2023 To date: 30.11.2023 No of weeks: 18

SI. No.	Weeks/Months	Class Day	Topic
1	1st week 1 Aug. To 5 Aug	1st	1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only
		2nd	1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only
		3rd	1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere ,Sky wave propagation, Space wave propagation
		4th	1.3 Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
2	2nd week 7 Aug. To 12 Aug	1st	1.3 Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
		2nd	1.4 Radiation mechanism of an antenna-Maxwell equation.
		3rd	1.5 Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator
		4th	1.5 Radiator resistance, Bandwidth, Beam width, Radiation pattern
3	3rd week 14 Aug. To 19 Aug	1st	1.6 Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna
		2nd	1.7 Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi & Rohmbus only
		3rd	1.8 Basic Concepts of Smart Antennas- Concept and benefits of smart antennas
		4th	Unit-2: TRANSMISSION LINES.
4	4th week 21 Aug To 26 Aug	1st	2.1 Fundamentals of transmission line.
		2nd	2.2 Equivalent circuit of transmission line & RF equivalent circuit
		3rd	2.3 Characteristics impedance, methods of calculations & simple numerical.
		4th	2.4 Losses in transmission line.
5	5th week 28 Aug. To 2 Sept	1st	2.5 Standing wave – SWR, VSWR, Reflection coefficient, simple numerical.
		2nd	2.6 Quarter wave & half wavelength line
		3rd	2.7 Impedance matching & Stubs – single & double
		4th	2.8 Primary & secondary constant of X-mission line.
6	1st week 4 Sept. To 9 Sept	1st	Unit-3: TELEVISION ENGINEERING.
		3rd	2.3 Understand need of freewheeling diode.
		3rd	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
		4th	2.5 Working of three-phase half wave controlled converter with Resistive load
7	2nd week 11 Sept. To 16 Sept	1st	2.6 Working of three phase fully controlled converter with resistive load.
		2nd	2.7 Working of single phase AC regulator.
		3rd	2.8 Working principle of step up & step down chopper.
		4th	2.9 Control modes of chopper
8	3rd week 18 Sept. To 23 Sept	1st	2.10 Operation of chopper in all four quadrants.
		2nd	3. UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS 3.1 Classify inverters.
		3rd	3.1 Define-Aspect ratio, Rectangular Switching. Flicker,
		4th	3.1Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulseser
		1st	3.2 TV Transmitter – Block diagram & function of each block.

			...diagram & function of each block.
		3rd	3.5 Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP),
		4th	3.5 Liquid Crystal Display (LCD),Organic Light-Emitting Diode (OLED) Display, Quantum
10	1st week 02 Oct To 07 Oct	1st	3.5 Light-Emitting Diode (QLED) – only Comparison based on application
		2nd	3.6 Discuss the principle of operation - LCD display, Large Screen Display..
		3rd	3.7 CATV systems & Types & networks
		4th	3.8 Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
11	2nd week 9 Oct. To 14 Oct	1st	Unit-4: MICROWAVE ENGINEERING.
		2nd	4.1 Define Microwave Wave Guides.
		3rd	4.2 Operation of rectangular wave gives and its advantage.
		4th	4.3 Propagation of EM wave through wave guide with TE & TM modes.
12	3rd week 16 Oct. To 20 oct	1st	4.4 Circular wave guide.
		2nd	4.5 Operational Cavity resonator.
		3rd	4.6 Working of Directional coupler, Isolators & Circulator.
		4th	4.7 Microwave tubes-Principle of operational of two Cavity Klystron.
13	1st week 30 Oct. To 04 Nov	1st	4.8 Principle of Operations of Travelling Wave Tubes
		2nd	4.9 Principle of Operations of Cyclotron
		3rd	4.10 Principle of Operations of Tunnel Diode & Gunn diode
		4th	5.6 Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
14	2nd week 06 Nov. To 11 Nov	1st	Unit-5: Broadband communication
		2nd	5.1 Broadband communication system-Fundamental of
		3rd	5.1 Components and Network architecture
		3rd	5.1 Components and Network architecture
		4th	5.2 Importance & future of broadband telecommunication internet based network.
15	3rd week 13 Nov. To 18 Nov	1st	5.2 Importance & future of broadband telecommunication internet based network.
		2nd	5.2 Importance & future of broadband
		3rd	5.3 SONET(Synchronous Optical Network)-Signal frame
		3rd	5.3 SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages
		4th	5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications,
16	4th week 20 Nov. To 25 Nov	1st	5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications,
		2nd	5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications,
		3rd	5.5 BISDN -interfaces & Terminals, protocol architecture applications
		3rd	5.5 BISDN -interfaces & Terminals, protocol architecture applications
		4th	5.3 SONET(Synchronous Optical Network)-Signal frame
17	5th week 27 Nov. To 30 Nov	1st	5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications,
		2nd	5.5 BISDN -interfaces & Terminals, protocol architecture applications
		3rd	5.5 BISDN -interfaces & Terminals, protocol architecture applications
		3rd	5.5 BISDN -interfaces & Terminals, protocol architecture applications
		4th	5.5 BISDN -interfaces & Terminals, protocol architecture applications

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Signature of the Teacher

Discipline: ETC	Semester-5th Winter-2023		Name of the Teachng Faculty: Sri.Rabindra kumar satapathy(Lect. ETC Engg)
Sl. No.	Subject-Th.5. (Power Electronics)	No. Of Days/Week class alloted:04	Semester From date: 01.08.2023 To date: 30.11.2023 No of weeks: 17
	Weeks/Months	Class Day	Topic
1	1st week 1 Aug. To 5 Aug	1st	1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT
		2nd	1.2 Two transistor analogy of SCR.
		3rd	1.3 Gate characteristics of SCR.
		4th	1.4 Switching characteristic of SCR during turn on and turn off.
2	2nd week 7 Aug. To 12 Aug	1st	1.5 Turn on methods of SCR.
		2nd	1.6 Turn off methods of SCR (Line commutation and Forced commutation)
		3rd	1.6.1 Load Commutation
		4th	1.6.2 Resonant pulse commutation
3	3rd week 14 Aug. To 19 Aug	1st	1.7 Voltage and Current ratings of SCR.
		2nd	1.8 Protection of SCR
		3rd	1.8.2 Over current protection
		4th	1.8.3 Gate protection
4	4th week 21 Aug To 26 Aug	1st	1.9 Firing Circuits
		2nd	1.9.1 General layout diagram of firing circuit
		3rd	1.9.2 R firing circuits
		4th	1.9.3 R-C firing circuit
5	5th week 28 Aug. To 2 Sept	1st	1.9.4 UJT pulse trigger circuit
		2nd	1.9.5 Synchronous triggering (Ramp Triggering)
		3rd	1.10 Design of Snubber Circuits
		4th	2.1 Controlled rectifiers Techniques(Phase Angle, Extinction An control), Single quadrant semi converter, two quadrant full converter and dual Converter
6	1st week 4 Sept. To 9 Sept	1st	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads.
		3rd	2.3 Understand need of freewheeling diode.
		3rd	2.4 Working of single phase fully controlled converter with resis and R- L loads.
		4th	2.5 Working of three-phase half wave controlled converter with Resistive load
7	2nd week 11 Sept. To 16 Sept	1st	2.6 Working of three phase fully controlled converter with resis load.
		2nd	2.7 Working of single phase AC regulator.
		3rd	2.8 Working principle of step up & step down chopper.
		4th	2.9 Control modes of chopper
8	3rd week 18 Sept. To 23 Sept	1st	2.10 Operation of chopper in all four quadrants.
		2nd	3. UNDERSTAND THE INVERTERS AND CYCLO-CONVER 3.1 Classify inverters.
		3rd	3.2 Explain the working of series inverter
		4th	3.3 Explain the working of parallel inverter
9	4th week 25 Sept To 30 Sept	1st	3.4 Explain the working of single-phase bridge inverter
		2nd	3.5 Explain the basic principle of Cyclo-converter.
		3rd	3.6 Solve numerical simple problems of above Circuit.
		4th	3.7 Applications of Cyclo-converter.

		1st	4.1 List applications of power electronic circuits.
	1st week 02 Oct. To 07 Oct	2nd	4.2 List the factors affecting the speed of DC Motors.
		3rd	4.3 Speed control for DC Shunt motor using converter.
		4th	4.4 Speed control for DC Shunt motor using chopper.
11	2nd week 9 Oct. To 14 Oct	1st	4.5 List the factors affecting speed of the AC Motors.
		2nd	4.6 Speed control of Induction Motor by using AC voltage regulator
		3rd	4.7 Speed control of induction motor by using converters and inverters (V/F control).
		4th	4.8 Working of UPS with block diagram
12	3rd week 16 Oct. To 20 oct	1st	4.9 Battery charger circuit using SCR with the help of a diagram
		2nd	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
		3rd	5. PLC AND ITS APPLICATIONS 5.1 Introduction of Programmable Logic Controller(PLC)
		4th	5.2 Advantages of PLC
13	1st week 30 Oct. To 04 Nov	1st	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC.
		2nd	5.4 Applications of PLC
		3rd	5.5 Ladder diagram
		4th	5.6 Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
14	2nd week 06 Nov. To 11 Nov	1st	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate
		2nd	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
		3rd	5.9 Timers-i)T ON ii) T OFF and iii)Retentive timer
		3rd	5.10 Counters-CTU, CTD
		4th	5.11 Ladder diagrams using Timers and counters
15	3rd week 13 Nov. To 18 Nov	1st	5.12 PLC Instruction set
		2nd	5.13 Ladder diagrams for following
		3rd	(ii) Stair case lighting (iii) Traffic light
		3rd	5.14 Special control systems Basics DCS & SCADA systems
		4th	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)
16	4th week 20 Nov. To 25 Nov	1st	5.12 PLC Instruction set
		2nd	5.13 Ladder diagrams for following
		3rd	(ii) Stair case lighting (iii) Traffic light
		3rd	5.14 Special control
		4th	5.15 Computer Control–Data Acquisition, Direct Digital Control
17	5th week 27 Nov. To 30 Nov	1st	4.5 List the factors affecting speed of the AC Motors.
		2nd	4.6 Speed control of Induction Motor by using AC voltage regulato
		3rd	4.7 Speed control of induction motor by using converters and
		3rd	4.8 Working of UPS with block diagram
		4th	5.15 Computer Control–Data Acquisition, Direct Digital Control

Signature of the Teacher