

ACADEMIC LESSON PLAN OF WINTER 2024

Discipline: ELECTRONICS AND TELECOMMUNIC ATION	Semester: 3 rd Sem	Name of the Teaching Faculty: Amit Kumar Bisoyi
Subject: Circuit Theory	No. of days/per week class allotted:4p/we ek	Semester From: 1 st July 2024 to 08 th Nov 2024 No. of Weeks: 19 weeks
Week	Class Day	Theory Topics
1 st	1 st	1.1 Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize.
	2 nd	1.2 Voltage Division & Current Division, Energy Sources (Conti...)
	3 rd	1.2 Voltage Division & Current Division, Energy Sources
	4 th	1.3 Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active& Passive Elements.
2 nd	1 st	1.4 Energy Sources, Current and voltage sources and their transformation & mutual inductance
	2 nd	1.5 Star – Delta transformation
	3 rd	2.1 Nodal & Mesh Analysis of Electrical Circuits (Conti...)
	4 th	2.1 Nodal & Mesh Analysis of Electrical Circuits with simple problem.
3 rd	1 st	2.2.1 Thevenin's Theorem Statement, Explanation (Conti..)
	2 nd	2.2.1 Thevenin's Theorem problem solved
	3 rd	2.2.2 Norton's Theorem Statement, Explanation (Conti...)
	4 th	2.2.2 Norton's Theorem problems solved
4 th	1 st	2.2.3 Maximum Power transfer Theorem Statement, Explanation and simple problems
	2 nd	2.2.4 Superposition Theorem Statement, Explanation (Conti...)
	3 rd	2.2.4 Superposition Theorem with simple problems
	4 th	2.2.5 Millman Theorem Statement, Explanation with problems
5 th	1 st	2.2.6 Reciprocity Theorem -Statement, Explanation & simple problems
	2 nd	2.3 Solve numerical problems of above.
	3 rd	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.(Conti....)
	4 th	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. (Conti....)
6 th	1 st	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.
	2 nd	3.2 Phasor representation of alternating quantities
	3 rd	3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor. (Conti....)
	4 th	3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor.
7 th	1 st	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle. (Conti....)
	2 nd	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle
	3 rd	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle
	4 th	3.5 Define Time Constant of the above Circuit
8 th	1 st	3.6 Solve numerical simple problems of above Circuit. (Conti....)
	2 nd	3.6 Solve numerical simple problems of above Circuit.

	3 rd	4.1 Introduction to resonance circuits & Resonance tuned circuit (Conti....)
	4 th	4.1 Introduction to resonance circuits & Resonance tuned circuit.
9 th	1 st	4.2 Series& Parallel resonance
	2 nd	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. (Conti....)
	3 rd	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. (Conti....)
	4 th	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.
10 th	1 st	4.4 Parallel Resonance (RL, RC&RLC)& derive the expression (Conti....)
	2 nd	4.4 Parallel Resonance (RL, RC&RLC)& derive the expressions
	3 rd	4.5 Comparisons of Series & Parallel resonance& applications (Conti....)
	4 th	4.5 Comparisons of Series & Parallel resonance& applications 4.6 simple problems of above Circuit
11 th	1 st	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C & R-L-C (Conti....)
	2 nd	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C & R-L-C
	3 rd	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, RC, R-L-C (Conti....)
	4 th	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, , R-L-C
12 th	1 st	5.2 Analysis and derive the equations for circuit parameters of Impulse response of RC
	2 nd	5.2 Analysis and derive the equations for circuit parameters of Impulse response of RLC
	3 rd	Problems solve for Laplace transformation
	4 th	Problems solve for Laplace transformation (Conti...)
13 th	1 st	6.1 Network elements, ports in Network (One port, two port)
	2 nd	6.2 Network Configurations (T & pie).
	3 rd	6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion
	4 th	6.4 h- parameter (hybrid parameter) Representation
14 th	1 st	6.5 Define T-Network & pie – Network
	2 nd	7.1 Ideal & Practical filters and its applications, cut off frequency, pass band and stop band.
	3 rd	7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.
	4 th	7.3 Butterworth Filter Design
15 th	1 st	7.4 Attenuation and Gain, Bel , Decibel & neper and their relations.
	2 nd	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators(CONT)
	3 rd	Attenuators& its applications. Classification-T- Type & PI – Type attenuators(CONT)
	4 th	Attenuators& its applications. Classification-T- Type & PI – Type attenuators.
16 th	1 st	Revision Class
	2 nd	Revision Class
	3 rd	Revision Class
	4 th	Revision Class
17 th	1 st	Revision Class
	2 nd	Revision Class
	3 rd	Revision Class
	4 th	Revision Class
18 th	1 st	Revision Class
	2 nd	Revision Class
	3 rd	Revision Class
	4 th	Revision Class
19 th	1 st	Revision Class

	2 nd	Revision Class
	3 rd	Revision Class
	4 th	Revision Class

Amit Kumar Prisagi

Signature of Teaching Faculty

ACADEMIC LESSON PLAN OF WINTER 2024

Discipline: ELECTRICAL	Semester: 5 TH Sem Sec A	Name of the Teaching Faculty: Amit Kumar Bisoyi
Subject: ENERGY CONVERSION– II	No. of days/per week class allotted: 4p/week	Semester From: 1 st July 2024 to 08 th Nov 2024 No. of Weeks: 19 weeks
1 st	1 st	Unit-1:ALTERNATOR 1.1 Types of alternator and their constructional features
	2 nd	1.2 Basic working principle of alternator and establish the relation between speed and frequency
	3 rd	1.3 Explain terminology in armature winding, and derive expressions for winding factors (Pitch factor, Distribution factor).
	4 th	1.4 Explain harmonics, its causes and impact on winding factor.
2 nd	1 st	1.5 Derive E.M.F equation. (Solve numerical problems (contd.))
	2 nd	1.5 Derive E.M.F equation. (Solve numerical problems
	3 rd	1.6 Explain Armature reaction and its effect on emf at different pf of load (contd.)
	4 th	1.6 Explain Armature reaction and its effect on emf at different pf of load.
3 rd	1 st	1.7 Draw the vector diagram of loaded alternator. (Solve numerical problems)
	2 nd	1.8 State and explain testing of alternator (open circuit and short circuit methods) (Solve numerical problems).(contd.)
	3 rd	1.8 State and explain testing of alternator (open circuit and short circuit methods) (Solve numerical problems).
	4 th	1.9 Determination of voltage regulation of Alternator by direct loading and synchronous impedance method
4 th	1 st	1.10 Explain parallel operation of alternator using synchro-scope, dark and bright lamp method
	2 nd	1.11 Explain distribution of load by parallel connected alternators
	3 rd	Unit-2:SYNCHRONOUS MOTOR 2.1 Explain constructional feature of Synchronous Motor. 2.2 Explain principles of operation, concept of load angle.
	4 th	2.3 Explain effect of varying load with constant excitation(cont..)
5 th	1 st	2.3 Explain effect of varying load with constant excitation
	2 nd	2.4 Explain effect of varying excitation with constant load.
	3 rd	2.5 Derive torque, power developed(cont..)
	4 th	2.5 Derive torque, power developed. 2.6 Explain power angle characteristics of cylindrical rotor motor.
6 th	1 st	2.7 Explain effect of excitation on Armature current and power factor. 2.8 Explain Hunting & function of Damper Bars.
	2 nd	2.9 Describe method of starting of Synchronous motor.(cont..)
	3 rd	2.9 Describe method of starting of Synchronous motor. 2.10 State application of synchronous motor
	4 th	Unit-3: THREE PHASE INDUCTION MOTOR 3. 1 Explain and derive production of rotating magnetic field.
7 th	1 st	3. 2 Explain constructional feature of Squirrel cage and Slip ring induction motor.
	2 nd	3. 3 Explain principles of operation of 3-phase Induction motor.
	3 rd	3. 4 Explain slip speed, slip and slip relation with rotor quantities
	4 th	3. 5 Derive Torque during starting and running and conditions for maximum torque. (solve numerical problems) (contd.)
8 th	1 st	3. 5 Derive Torque during starting and running and conditions for maximum torque. (solve numerical problems)
	2 nd	3. 6 Derive Torque-slip characteristics
	3 rd	3. 7 Derive relation between full load torque and starting torque etc. (solve numerical problems).
	4 th	3. 8 Determine the relations between Rotor Copper loss, Rotor output and Gross Torque, and relationship of slip with rotor copper loss. (solve

		numerical problems)
9 th	1 st	3. 9 Explain and state Methods of starting and different types of starters
	2 nd	3. 10 Explain speed control by Voltage Control, Rotor resistance control, pole changing, frequency control methods.
	3 rd	3. 11 Describe plugging applicable to three phase induction motor
	4 th	3. 12 Describe different types of motor enclosures
10 th	1 st	3. 13 Explain principle of Induction Generator and state its applications
	2 nd	Unit-4:SINGLE PHASE INDUCTION MOTOR. 4.1 Explain Rotating – field theory of 1-phase induction motor.
	3 rd	4.2 Explain Ferrari's principle.
	4 th	4.3 Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors 4.3.1 Split phase motor.
11 th	1 st	4.3.2 Capacitor Start motor.
	2 nd	4.3.3 Capacitor start, capacitor run motor
	3 rd	4.3.4 Permanent capacitor type motor
	4 th	4.3.5 Shaded pole motor
12 th	1 st	4.4 Explain the method to change the direction of rotation of above motors
	2 nd	Unit-5:COMMUTATOR MOTORS 5.1 Explain construction, working principle, running characteristic and application of singlephase series motor (contd.)
	3 rd	5.1 Explain construction, working principle, running characteristic and application of singlephase series motor.
	4 th	5.2 Explain construction, working principle and application of Universal motors. (contd.)
13 th	1 st	5.2 Explain construction, working principle and application of Universal motors.
	2 nd	5.3 Explain working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.(contd.)
	3 rd	5.3 Explain working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.
	4 th	Unit-6:SPECIAL ELECTRICAL MACHINE 6.1 Principle of Stepper motor.
14 th	1 st	6.2 Classification of Stepper motor. 6.3 Principle of variable reluctant stepper motor.
	2 nd	6.4 Principle of Permanent magnet stepper motor.
	3 rd	6.5 Principle of hybrid stepper motor.
	4 th	6.6 Applications of Stepper motor.
15 th	1 st	Unit-7: THREE PHASE TRANSFORMERS 7.1 Explain Grouping of winding, Advantages
	2 nd	7.2 Explain parallel operation of the three phase transformers.
	3 rd	7.3 Explain tap changer (On/Off load tap changing
	4 th	7.4 State maintenance of Transformers
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	4 th	REVISION CLASS

Amit Kumar Puri

Signature of Teaching Faculty