UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: Electrical Engineering	SEMESTER: 5th Sem	NAME OF THE TEACHING FACULTY: Er.Kalakar Mohanty		
SUBJECT: ENERGY CONVERSION – II	No of Days/Per week class allotted: **4** Class P/W**(60)**	Semester From Date:15/09/2022 To Date:22/12/2022 No. Of Weeks: **15**		
WEEK	**CLASS DAY**	**THEORY TOPICS**	**REMARKS**	
			Date	Dean/Principal
1st	1st	Types of alternator and their constructional features		
	2nd	Basic working principle of alternator and the relation between speed and frequency.		
	3rd	Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor)		
	4th	Explain harmonics, its causes and impact on winding factor. E.M.F equation of alternator. (Solve numerical problems).		
2nd	1st	Doubt clear class		
	2nd	Explain Armature reaction and its effect on emf at different power factor of load. The vector diagram of loaded alternator. (Solve numerical problems)		
	3rd	Testing of alternator (Solve numerical problems)		
	4th	Assignment		
3rd	1st	Assignment question Discussion		
	2nd	Open circuit test. Short circuit test		
	3rd	Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)		
	4th	Equitable use of resources for sustainable life styles		
4th	1st	Parallel operation of alternator using synchro-scope and dark & bright lamp method		
	2nd	Explain distribution of load by parallel connected alternators.		
	3rd	Constructional feature of Synchronous Motor. , Principles of operation, concept of load angle		
	4th	Derive torque, power developed.		
5th	1st	Class Test		
	2nd	Effect of varying load with constant excitation., Effect of varying excitation with constant load.		
	3rd	Power angle characteristics of cylindrical rotor motor		

	4th	Explain effect of excitation on Armature current and power factor.		
6th	1st	**Revision of Last Class**		
	2nd	Assignment		
	3rd	Hunting in Synchronous Motor., Function of Damper Bars in synchronous motor and generator.		
	4th	. Describe method of starting of Synchronous motor. ,. State application of synchronous motor.		
7th	1st	Production of rotating magnetic field.		
	2nd	Revision of Last class		
	3rd	Constructional feature of Squirrel cage and Slip ring induction motors.		
	4th	Assignment		
8th	1st	Working principles of operation of 3-phase Induction motor.		
	2nd	. Define slip speed, slip and establish the relation of slip with rotor quantities.		
	3rd	Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems)		
	4th	Doubt Clearing Class and Assignment Questions Discussion.		
9th	1st	Torque-slip characteristics.		
	2nd	. Derive relation between full load torque and starting torque etc. (solve numerical problems)		
	3rd	Revision Class		
	4th	Derive relation between full load torque and starting torque etc. (solve numerical problems)		
10th	1st	Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems)		
	2nd	Methods of starting and different types of starters used for three phase Induction motor		
	3rd	. Explain speed control by Voltage Control, Rotor resistance control, Pole changing, frequency control methods		
	4th	. Plugging as applicable to three phase induction motor		
11th	1st	Describe different types of motor enclosures. ,. Explain principle of Induction Generator and state its applications.		
	2nd	Explain Ferrari's principle. 4.2. Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor.		
	3rd	Class Test		

	4th	Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors		
12th	1st	Doubt Clear Class		
	2nd	Split phase motor.,Capacitor Start motor		
	3rd	Assignment		
	4th	Capacitor start, capacitor run motor.		
13th	1st	Permanent capacitor type motor.		
	2nd	Shaded pole motor.,Explain the method to change the direction of rotation of above motors.		
	3rd	Assignment question Discussion		
	4th	Construction, working principle and application of Universal motors.,. Working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.		
14th	1st	Principle of Stepper motor, Classification of Stepper motor.		
	2nd	Principle of variable reluctant stepper motor,Principle of Permanent magnet stepper motor.		
	3rd	Principle of hybrid stepper motor, Applications of Stepper motor.		
	4th	Explain Grouping of winding, Advantages.		
15th	1st	Explain parallel operation of the three phase transformers		
	2nd	Explain tap changer (On/Off load tap changing)		
	3rd	Maintenance Schedule of Power Transformers.		
	4th	Discussion Sample paper question		

Chittaranjan Parida

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Chittaranjan Parida

DEAN

PRINCIPAL