DISCIPLINE – ELECTRICAL ENGG	SEMESTER 5TH	NAME OF THE TEACHING FACULTY- JYOTIRMAYEE SETHY, LECT(ELECT.)	
SUB- EC-II	NO OF DAYS PER WEEK CLASS ALLOTED- 4	SEMESTER FROM 01.10.2021 TO 28.02.2022 NO OF WEEK – 16 WEEKS	
WEEK	CLASS DAY	THEORY	STATUS
1ST WEEK	1ST day 2nd day 3rd day 4th day	**1. ALTERNATOR:** 1.1. Types of alternator and their constructional features. 1.2. Basic working principle of alternator and the relation between speed and frequency. 1.3. Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor).	Complete
2ND WEEK	1ST day 2nd day 3rd day 4th day	1.4. Explain harmonics, its causes and impact on winding factor. 1.5. E.M.F equation of alternator. (Solve numerical problems). 1.6. Explain Armature reaction and its effect on emf at different power factor of load.	
3RD WEEK	1ST day 2nd day 3rd day 4th day	1.7. The vector diagram of loaded alternator. (Solve numerical problems) 1.8. Testing of alternator (Solve numerical problems) 1.8.1. Open circuit test. 1.8.2. Short circuit test. 1.9. Determination of voltage regulation of Alternator by direct loading and synchronous impedance method. (Solve numerical problems)	
4TH WEEK	1ST day 2nd day	1.10. Parallel operation of alternator using synchro-scope and dark & bright lamp method. 1.11. Explain distribution of load by parallel connected alternators.	
5TH WEEK	3rd day 4th day	**2. SYNCHRONOUS MOTOR:** 2.1. Constructional feature of Synchronous Motor. 2.2. Principles of operation, concept of load angle 2.3. Derive torque, power developed. 2.4. Effect of varying load with constant	Complete

6TH WEEK	1ST day 2nd day 3rd day 4th day 1ST day 2nd day 3rd day 4th day	excitation. 2.5. Effect of varying excitation with constant load. 2.6. Power angle characteristics of cylindrical rotor motor. 2.7. Explain effect of excitation on Armature current and power factor. 2.8. Hunting in Synchronous Motor. 2.9. Function of Damper Bars in synchronous motor and generator. 2.10. Describe method of starting of Synchronous motor. 2.11. State application of synchronous motor.	Completed
7TH WEEK	1ST day 2nd day 3rd day 4th day	**3. THREE PHASE INDUCTION MOTOR:** 3.1. Production of rotating magnetic field. 3.2. Constructional feature of Squirrel cage and Slip ring induction motors. 3.3. Working principles of operation of 3-phase Induction motor. 3.4. Define slip speed, slip and establish the relation of slip with rotor quantities. 3.5. Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems)	Completed
8TH WEEK	1ST day 2nd day 3rd day 4th day	3.6. Torque-slip characteristics. 3.7. Derive relation between full load torque and starting torque etc. (solve numerical problems) 3.8. Establish the relations between Rotor Copper loss, Rotor output and Gross Torque and relationship of slip with rotor copper loss. (solve numerical problems) 3.9. Methods of starting and different types of starters used for three phase Induction motor.	Completed
9TH WEEK	1ST day 2nd day 3rd day 4th day	3.10. Explain speed control by Voltage Control, Rotor resistance control, Pole changing, frequency control methods. 3.11. Plugging as applicable to three phase induction motor. 3.12. Describe different types of motor enclosures. 3.13. Explain principle of Induction Generator and state its applications.	

10TH WEEK 11TH WEEK	1ST day 2nd day 3rd day 4th day 1ST day 2nd day 3rd day 4th day	**4. SINGLE PHASE INDUCTION MOTOR:** 4.1. Explain Ferrari's principle. 4.2. Explain double revolving field theory and Cross-field theory to analyze starting torque of 1-phase induction motor. 4.3. Explain Working principle, Torque speed characteristics, performance characteristics and application of following single phase motors. 4.3.1. Split phase motor. 4.3.2. Capacitor Start motor. 4.3.3. Capacitor start, capacitor run motor. 4.3.4. Permanent capacitor type motor. 4.3.5. Shaded pole motor. 4.4. Explain the method to change the direction of rotation of above motors.	Complete
12TH WEEK 13TH WEEK	1ST day 2nd day 3rd day 4th day 1ST day 2nd day	**5. COMMUTATOR MOTORS:** 5.1. Construction, working principle, running characteristic and application of single phase series motor. 5.2. Construction, working principle and application of Universal motors. 5.3. Working principle of Repulsion start Motor, Repulsion start Induction run motor, Repulsion Induction motor.	Complete
14TH WEEK	3rd day 4th day 1ST day 2nd day 3rd day 4th day	**6. SPECIAL ELECTRICAL MACHINE:** 6.1. Principle of Stepper motor. 6.2. Classification of Stepper motor. 6.3. Principle of variable reluctant stepper motor. 6.4. Principle of Permanent magnet stepper motor. 6.5. Principle of hybrid stepper motor. 6.6. Applications of Stepper motor.	Complete
15TH WEEK	1ST day 2nd day 3rd day 4th day	**7. THREE PHASE TRANSFORMERS:** 7.1. Explain Grouping of winding, Advantages. 7.2. Explain parallel operation of the three phase transformers. 7.3. Explain tap changer (On/Off load tap changing) 7.4. Maintenance Schedule of Power Transformers.	Complete
16TH WEEK	1ST day 2nd day	REVISION FOR EXAM	

Subject :- Circuit & Network Theory(Th2)

No of Days/Per week Class Allotted :- 04

Semester

No Of Weeks : - 27

WEEK	CLASS DAY	THEORY	STATUS
		MAGNETIC CIRCUITS :- Introduction	
1 ST	1 st	Magnetizing force, Intensity, MMF, flux and their relations	Completed
	2 nd	Permeability, reluctance and permeance	
	3 rd	Analogy between electric and Magnetic Circuits	
	4 th	B-H Curve	
2 ND	1 st	Series & parallel magnetic circuit.	Completed
	2 nd	Hysteresis loop	
	3 rd	**COUPLED CIRCUITS :-** Self Inductance and Mutual Inductance	
	4 th	Conductively coupled circuit and mutual impedance	
3 RD	1 st	Dot convention; Coefficient of coupling	Completed
	2 nd	Series and parallel connection of coupled inductors.	
	3 rd	Solve numerical problems	
	4 th	**CIRCUIT ELEMENTS AND ANALYSIS** :-Active, Passive, Unilateral & bilateral, Linear & Non linear elements.	
4 TH	1 st	Active, Passive, Unilateral & bilateral, Linear & Non linear elements.	Completed
	2 nd	Mesh Analysis, Mesh Equations by inspection, Super mesh Analysis	
	3 rd	Nodal Analysis, Nodal Equations by inspection, Super node Analysis.	
	4 th	Source Transformation Technique.	
5 TH	1 st	Solve numerical problems (With Independent Sources Only).	Completed
	2 nd	**NETWORK THEOREMS :- Introduction**	
	3 rd	Star to delta transformation	
	4 th	Delta to star transformation	
6 TH	1 st	Super position Theorem	Completed
	2 nd	Thevenin's Theorem	
	3 rd	Norton's Theorem	
	4 th	Maximum power Transfer Theorem.	
7 TH	1 st	Solve numerical problems (With Independent Sources Only)	
	2 nd	**AC CIRCUIT AND RESONANCE :- INTRODUCTION**	completed
	✓ 3 rd	A.C. through R-L, R-C & R-L-C Circuit	Completed
	4 th	Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.	Completed
8 TH	1 st	Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits	completed
	2 nd	Power factor & power triangle.	completed
	3 rd	Deduce expression for active, reactive, apparent power.	completed
	4 th	Derive the resonant frequency of series resonance .	completed
9 TH	1 st	Derive the resonant frequency parallel resonance circuit	completed
	2 nd	Define Bandwidth, Selectivity & Q-factor in series circuit.	completed
	3 rd	Solve numerical problems	completed
	4 th	**ONLINE TEST**	completed
10 TH	1 st	**POLYPHASE CIRCUIT**:- Concept of poly-phase system and phase sequence	completed
	2 nd	Relation between phase and line quantities in star & delta connection	completed
	3 rd	Power equation in 3-phase balanced circuit.	completed
	4 th	Solve numerical problems	completed
	1 st	Measurement of 3-phase power by two wattmeter method.	completed
	2 nd		

11 TH	3 rd	Solve numerical problems.	completed
	4 th	**TRANSIENTS:- INTRODUCTION**	completed
12 TH	1 st	Steady state Response.	completed
	2 nd	transient state response.	completed
	3 rd	Response to R-L, R-C under DC condition	completed
	4 th	RLC circuit under DC condition.	completed
13 TH	1 st	Solve numerical problems	completed
	2 nd	**TWO-PORT NETWORK :- INTRODUCTION**	completed
	3 rd	Open circuit impedance (z) parameters	completed
	4 th	Short circuit admittance (y) parameters	completed
14 TH	1 st	Transmission (ABCD) parameters	completed
	2 nd	Hybrid (h) parameters.	completed
	3 rd	Inter relationships of different parameters.	completed
	4 th	T and π representation.	completed
15 TH	1 st	Solve numerical problems	completed
	2 nd	**FILTERS :- Define filter**	completed
	3 rd	Classification of pass Band, stop Band and cut-off frequency.	completed
	4 th	Classification of filters.	completed
16 TH	1 st	Constant – K low pass filter & Constant – K high pass filter.	completed
	2 nd	Constant – K Band pass filter & Constant – K Band elimination filter.	completed
	3 rd	Solve Numerical problems	completed
	4 th	**ONLINE TEST**	completed
17 TH	1 st	**REVISION AND CLASS TEST**	completed
	2 nd		
	3 rd		
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18 TH	1 st	**REVISION AND CLASS TEST**	completed
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