



GOVERNMENT POLYTECHNIC KORAPUT

Th2. Energy Conversion-2

Name of the Course: Diploma in Electrical Engineering			
Faculty: Sandhya Kumari Randhi			
Course code:	Th2	Semester W.E.F 01/10/2021	3rd
Total Period:	60	Examination	3hrs
Theory periods:	4P/week	Internal Assessment :	20
Maximum marks:	100	End Semester Examination:	80

DEPARTMENT OF ELECTRICAL

Vision:-

To create competent and industry ready Electrical diploma engineers with professional and social values to meet future challenges.

Mission:-

- To prepare diploma holders through "qualitative competency based education system" to compete with national requirement along with core values
- To produce dynamic Electrical Engineers to serve the society and industry .
- To develop leadership qualities, communication skills, critical thinking and attitude for Lifelong learning.

Program educational objectives:-

PEO1:	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in professional and/or higher education.
PEO2:	to provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3:	To engage in lifelong learning, career enhancement to adopt emerging technologies

Course outcomes:-

CO1	Describe construction and working principle of AC machines and special machines.
CO2	Explain the starting and speed control of AC motors.
CO3	Determine losses and efficiency and develop problem solving ability on synchronous machine and 3 phase induction motor for better understanding about the concept of machine.
CO4	Familiar with different testing methods carried out on 3 phase machines.



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TOPIC WISE DISTRIBUTION OF PERIOD

SL. NO.	TOPIC	NO. OF PERIOD
01	ALTERNATOR	14
02	SYNCHRONOUS MOTOR	08
03	INDUCTION MOTOR	14
04	SINGLE PHASE INDUCTION MOTOR	08
05	COMMUTATOR MOTOR	06
06	SPECIAL ELECTRIC MACHINES	05
07	THREE PHASE TRANSFORMERS	05
	TOTAL	60

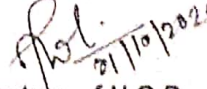
WEEK	CLASS DAY	THEORY/PRACTICAL TOPIC
1 ST	1 ST	Production of rotating magnetic field
	2 ND	Constructional feature of squirrel cage and slip ring induction motor
	3 RD	Principles of operation of 3-phase induction motor
	4 TH	Slip speed, slip, and relation with rotor quantities
2 ND	1 ST	Starting torque, Running torque condition for maximum torque
	2 ND	Numerical problems
	3 RD	Torque slip characteristics, relation between full load torque and starting torque
	4 TH	Numerical problems
3 RD	1 ST	Relations between rotor copper loss , rotor output, and gross torque and relation of slip with rotor copper loss
	2 ND	Explain and state methods of starting and different type of starters
	3 RD	Explain speed control by voltage control, rotor resistance control, pole changing, frequency control techniques
	4 TH	Plugging of three phase induction motors
4 TH	1 ST	Different types of motor enclosures.
	2 ND	Principle of induction generator and its application
	3 RD	Types of alternators and their applications
	4 TH	Working principle of alternator and relation between speed and frequency.
5 TH	1 ST	Armature winding and derivation of expression for winding factors.
	2 ND	Harmonics its causes and its impact on winding factor.
	3 RD	EMF equation of alternator.
	4 TH	Numerical problems
6 TH	1 ST	Armature reaction and its effect on EMF at different power factor of load.
	2 ND	Vector diagram of loaded alternator.
	3 RD	Numerical problems
	4 TH	Testing of alternator (open circuit test and short circuit test).
7 TH	1 ST	Numerical problems
	2 ND	Determination of voltage regulation by direct loading and synchronous impedance



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		method.
	3 RD	Parallel operation of alternator using synchroscope, dark and bright lamp method.
	4 TH	Distribution of load by parallel connected alternators.
8 TH	1 ST	Constructional features of synchronous motor. Principle of operation and concept of load angle.
	2 ND	Effect of varying load with constant excitation and effect of varying excitation with constant load.
	3 RD	Derivation of torque and power developed.
	4 TH	Power angle characteristics of cylindrical rotor motor.
9 TH	1 ST	Effect of excitation on armature current and power factor.
	2 ND	Haunting and function damper bars.
	3 RD	Method of starting synchronous motor.
	4 TH	Application of synchronous motor.
10 TH	1 ST	Rotating field theory of single phase induction motor.
	2 ND	Feraris principle.
	3 RD	Split phase motor.
	4 TH	Capacitor start motor.
11 TH	1 ST	Capacitor start, capacitor run motor.
	2 ND	Permanent capacitor type motor.
	3 RD	Shaded pole motor.
	4 TH	Method to change the direction of rotation of above motors.
12 TH	1 ST	Construction and working principle of single phase series motor.
	2 ND	Running characteristic and application of single phase series motor.
	3 RD	Construction, working principle and application of universal motor.
	4 TH	Repulsion start motor.
13 TH	1 ST	Repulsion start induction motor.
	2 ND	Repulsion induction motor.
	3 RD	Principle and classification of stepper motor.
	4 TH	Principle of variable reluctance stepper motor.
14 TH	1 ST	Principle of permanent magnet stepper motor.
	2 ND	Principle of hybrid stepper motor.
	3 RD	Applications of stepper motor.
	4 TH	Grouping of winding
15 TH	1 ST	Advantages of grouping.
	2 ND	Parallel operation of three phase transformer.
	3 RD	Tap changer (on/off load tap changing)
	4 TH	Maintenance transformers.


Signature of concerned faculty


signature of H.O.D.