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

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

01/10/2021

Signature of concerned faculty

01/10/2021

signature of H.O.D.