



GOVERNMENT POLYTECHNIC KORAPUT  
DEPARTMENT OF ELECTRICAL ENGINEERING

### Pr. 1 ELECTRICAL MACHINE LAB-I

Name of the Course: Diploma in Electrical Engineering			
Faculty: Mr Ruhia Hansda			
Course code:	Th.4	Date:-01/10/2021	
Total Period:	90 Periods	Semester:	4 <sup>th</sup>
Lab. Periods:	6P / Week	Examination:	3 Hrs
Tutorial:	-	Term Work/Sessional:	25
Maximum marks:	75	End Semester Examination:	50

#### VISION:

To create competent & 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	Identify the physical parts of the DC machines and terminals of the machines.
Co2	Interpret and apply the Speed Control methods of a DC Motor.
Co3	Operate and maintain DC shunt, series and compound motors and three phase transformers AND Perform OC Test and SC test of a single phase transformer.
Co4	Explain the need for starter, connect and run a DC shunt Motor using 3 point Starter.



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LESSON PLAN

Week	Day Each 3 Period	Experiments
1 <sup>st</sup>	1 <sup>st</sup>	1. Identification of different terminals of a DC machine by test lamp method and multimeter method & to measure insulation resistance by megger
	2 <sup>nd</sup>	1. Identification of different terminals of a DC machine by test lamp method and multimeter method & to measure insulation resistance by megger
2 <sup>nd</sup>	1 <sup>st</sup>	2. Dimensional and material study of various parts of a DC machine.
	2 <sup>nd</sup>	2. Dimensional and material study of various parts of a DC machine.
3 <sup>rd</sup>	1 <sup>st</sup>	3. Plot OCC of a DC shunt generator at constant speed and determine critical resistance from the graph.
	2 <sup>nd</sup>	3. Plot OCC of a DC shunt generator at constant speed and determine critical resistance from the graph.
4 <sup>th</sup>	1 <sup>st</sup>	4. Plot External Characteristics of a DC shunt generator at constant speed.
	2 <sup>nd</sup>	4. Plot External Characteristics of a DC shunt generator at constant speed.
5 <sup>th</sup>	1 <sup>st</sup>	4. Plot External Characteristics of a DC shunt generator at constant speed
	2 <sup>nd</sup>	5. Study of Three point starter, connect and run a DC shunt motor & measure the no load current.
6 <sup>th</sup>	1 <sup>st</sup>	5. Study of Three point starter, connect and run a DC shunt motor & measure the no load current.
	2 <sup>nd</sup>	6. Study of Four point starter, connect and run a DC compound motor & measure no load current.
7 <sup>th</sup>	1 <sup>st</sup>	6. Study of Four point starter, connect and run a DC compound motor & measure no load current.
	2 <sup>nd</sup>	6. Study of Four point starter, connect and run a DC compound motor & measure no load current
8 <sup>th</sup>	1 <sup>st</sup>	7. Control the speed of a DC shunt motor by field flux control method & armature voltage control method.
	2 <sup>nd</sup>	7. Control the speed of a DC shunt motor by field flux control method & armature voltage control method.
9 <sup>th</sup>	1 <sup>st</sup>	8. Determine the armature current vs. speed characteristic of a DC motor
	2 <sup>nd</sup>	8. Determine the armature current vs. speed characteristic of a DC motor
10 <sup>th</sup>	1 <sup>st</sup>	9. Determine the efficiency of a DC machine by brake test method.
	2 <sup>nd</sup>	9. Determine the efficiency of a DC machine by brake test method.
11 <sup>th</sup>	1 <sup>st</sup>	9. Determine the efficiency of a DC machine by brake test method.
	2 <sup>nd</sup>	10. Identification of terminals, determination of voltage transformation ratio of a single phase transformer.
12 <sup>th</sup>	1 <sup>st</sup>	10. Identification of terminals, determination of voltage transformation ratio of a single phase transformer.
	2 <sup>nd</sup>	11. Perform OC Test and SC test of a single phase transformer.
13 <sup>th</sup>	1 <sup>st</sup>	11. Perform OC Test and SC test of a single phase transformer.
	2 <sup>nd</sup>	12. Determine the voltage regulation of a single phase transformer at different loads.
14 <sup>th</sup>	1 <sup>st</sup>	12. Determine the voltage regulation of a single phase transformer at different loads.
	2 <sup>nd</sup>	13. Polarity test of single phase transformer and parallel operation of two single phase transformers.
15 <sup>th</sup>	1 <sup>st</sup>	13. Polarity test of single phase transformer and parallel operation of two single phase transformers.
	2 <sup>nd</sup>	

  
Signature of faculty concerned

  
H.O.D. Electrical