

<b>DISCIPLINE – ELECTRICAL ENGG</b>	<b>SEMESTER 4TH</b>	<b>NAME OF THE TEACHING FACULTY- JYOTIRMAYEE SETHY, LECT(ELECT ENGG.)</b>	
<b>SUB-EC1</b>	<b>No Of Days Per Week Class Alloted- 5</b>	<b>SEMESTER FROM 16.01.2024 TO 14.05.2024 NO OF WEEK – 18 WEEKS</b>	
<b>WEEK</b>	<b>CLASS DAY</b>	<b>THEORY</b>	<b>STATUS</b>
1 <sup>ST</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<b>D.C GENERATOR</b>  1.1. Operating principle of generator 1.2. Constructional features of DC machine 1.2.1. Yoke, Pole & field winding, Armature, Commutator. 1.2.2. Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch. 1.2.3. Simple Lap and wave winding, Dummy coils. 1.3. Different types of D.C. machines (Shunt, Series and Compound) 1.4. Derivation of EMF equation of DC generators. (Solve problems) 1.5. Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems	
2 <sup>nd</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	1.6. Armature reaction in D.C. machine 1.7. Commutation and methods of improving commutation. 1.7.1. Role of inter poles and compensating winding in commutation. 1.8. Characteristics of D.C. Generators 1.9. Application of different types of D.C. Generators. 1.10. Concept of critical resistance and critical speed of DC shunt generator 1.11. Conditions of Build-up of emf of DC generator. 1.12. Parallel operation of D.C. Generators. 1.13. Uses of D.C generators.	

3 <sup>RD</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day &3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	<p><b>D. C. MOTORS</b></p> <p>2.1. Basic working principle of DC motor</p> <p>2.2. Significance of back emf in D.C. Motor</p> <p>2.3. Voltage equation of D.C. Motor and condition for maximum power output(simple problems)</p> <p>2.4. Derive torque equation (solve problems)</p> <p>2.5. Characteristics of shunt, series and compound motors and their application.</p> <p>2.6. Starting method of shunt, series and compound motors.</p>	
4 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day &3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	<p>2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problem</p> <p>2.8. Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method</p> <p>2.9. Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems)</p> <p>2.10. Determination of efficiency of D.C. Machine by Swinburne's Test method(solve numerical problems)</p> <p>2.11. Losses, efficiency and power stages of D.C. motor(solve numerical problems)</p> <p>2.12. Uses of D.C. motors</p>	
5 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day &3 <sup>RD</sup> day 4 <sup>TH</sup> day 5 <sup>TH</sup> day	<p><b>SINGLE PHASE TRANSFORMER</b></p> <p>3.1 Working principle of transformer.</p> <p>3.2 Constructional feature of Transformer.</p> <p>3.2.1 Arrangement of core &amp; winding in different types of transformer.</p> <p>3.2.2 Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc.</p> <p>3.2.3 Explain types of cooling methods</p> <p>3.3 State the procedures for Care and maintenance.</p> <p>3.4 EMF equation of transformer.</p>	

6 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<p>3.6 Operation of Transformer at no load, on load with phasor diagrams.</p> <p>3.7 Equivalent Resistance, Leakage Reactance and Impedance of transformer.</p> <p>3.8 To draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load.</p>	
7 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<p>3.9 To explain Equivalent circuit and solve numerical problems.</p> <p>3.10 Approximate &amp; exact voltage drop calculation of a Transformer.</p> <p>3.11 Regulation of transformer</p>	
8 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<p>3.12 Different types of losses in a Transformer. Explain Open circuit and Short Circuit test.(Solve numerical problems)</p> <p>3.13 Explain Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems)</p>	
9 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<p>3.14 Explain All Day Efficiency (solve problems)</p> <p>3.15 Determination of load corresponding to Maximum efficiency.</p> <p>3.16 Parallel operation of single phase transformer</p>	
10 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day & 3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	<p><b>AUTO TRANSFORMER</b></p> <p>4.1. Constructional features of Auto transformer.</p> <p>4.2. Working principle of single phase Auto Transformer</p> <p>4.3. Comparison of Auto transformer with an two winding transformer (saving of Copper).</p>	

11 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	4.4. Uses of Auto transformer. 4.5. Explain Tap changer with transformer (on load and off load condition)  <b>INSTRUMENT TRANSFORMERS</b>  1.1 Explain Current Transformer and Potential Transformer 1.2 Define Ratio error, Phase angle error, Burden. 1.3 Uses of C.T. and P.T.	
12 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	Class test for chapter 1	
13 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	Class test for chapter2	
14 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day 5 <sup>th</sup> day	Class test of chapter3	
15 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day  5 <sup>th</sup> day	Class test for chapter 4 & 5	
16 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>nd</sup> day &3 <sup>rd</sup> day 4 <sup>th</sup> day  5 <sup>th</sup> day	REVISION FOR EXAM	

17 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day &3 <sup>RD</sup> day 4 <sup>TH</sup> day  5 <sup>TH</sup> day	REVISION FOR EXAM	
18 <sup>TH</sup> WEEK	1 <sup>ST</sup> day 2 <sup>ND</sup> day &3 <sup>RD</sup> day 4 <sup>TH</sup> day  5 <sup>TH</sup> day	REVISION FOR EXAM	