


ELECTRICAL ENGG	4TH	NAME OF THE TEACHING FACULTY- JYOTIRMAYEE SETHY, LECT(ELECT.	
SUB-EC1	No Of Days Per Week Class Alloted- 5	SEMESTER FROM 10.03.2022 TO 10.06.2022 NO OF WEEK – 16 WEEKS	
WEEK	CLASS DAY	THEORY	STATUS
1 ST WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th day	D.C GENERATOR 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 nd WEEK	1 ST day 2 nd day 3 rd day 4 th day 5 th 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.	

3RD WEEK

1ST day
2ND day
3RD day
4TH day
5TH day

D. C. MOTORS

- 2.1. Basic working principle of DC motor
- 2.2. Significance of back emf in D.C. Motor
- 2.3. Voltage equation of D.C. Motor and condition for maximum power output (simple problems)
- 2.4. Derive torque equation (solve problems)
- 2.5. Characteristics of shunt, series and compound motors and their application.
- 2.6. Starting method of shunt, series and compound motors.

Complete

4TH WEEK

1ST day
2ND day
3RD day
4TH day
5TH day

- 2.7. Speed control of D.C shunt motors by Flux control method. Armature voltage Control method. Solve problem
- 2.8. Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method
- 2.9. Determination of efficiency of D.C. Machine by Brake test method (solve numerical problems)
- 2.10. Determination of efficiency of D.C. Machine by Swinburne's Test method (solve numerical problems)
- 2.11. Losses, efficiency and power stages of D.C. motor (solve numerical problems)
- 2.12. Uses of D.C. motors

Complete

5 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	<p>SINGLE PHASE TRANSFORMER</p> <p>3.1 Working principle of transformer.</p> <p>3.2 Constructional feature of Transformer.</p> <p>3.2.1 Arrangement of core & 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> <p>3.5 Ideal transformer voltage transformation ratio</p>
6 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH 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 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	<p>3.9 To explain Equivalent circuit and solve numerical problems.</p> <p>3.10 Approximate & exact voltage drop calculation of a Transformer.</p> <p>3.11 Regulation of transformer</p>
8 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH 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>

Complete



Complete

9 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH	3.14 Explain All Day Efficiency (solve problems) 3.15 Determination of load corresponding to Maximum efficiency. 3.16 Parallel operation of single phase transformer
10 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	AUTO TRANSFORMER 4.1. Constructional features of Auto transformer. 4.2. Working principle of single phase Auto Transformer. 4.3. Comparison of Auto transformer with an two winding transformer (saving of Copper). 4.4. Uses of Auto transformer. 4.5. Explain Tap changer with transformer (on load and off load condition)
11 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	INSTRUMENT TRANSFORMERS 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 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Class test for chapter 1
13 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Class test for chapter 2
14 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Class test of chapter 3

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SUB-RE	No Of Days Per Week Class Alloted- 4	SEMESTER FROM 10.03.2022 TO 10.06.2022 NO OF WEEK – 16 WEEKS	
WEEK	CLASS DAY	THEORY	STATUS
1 ST WEEK	1 ST day 2 nd day 3 rd day 4 th day	Introduction to Renewable energy: 1.1. Environmental consequences of fossil fuel use. 1.2. Importance of renewable sources of energy. 1.3. Sustainable Design and development. 1.4. Types of RE sources.	
2 nd WEEK	1 ST day 2 nd day 3 rd day 4 th day	1.4. Types of RE sources. 1.5. Limitations of RE sources. 1.6. Present Indian and international energy scenario of conventional and RE sources	

<p>3RD WEEK</p>	<p>1ST day 2ND day 3RD day 4TH day</p>	<p>Solar Energy:</p> <p>2.1. Solar photovoltaic system-Operating principle.</p> <p>2.2. Photovoltaic cell concepts</p> <p>2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).</p> <p>2.3. Classification of energy Sources.</p>	<p><i>Con</i></p>
<p>4TH WEEK</p>	<p>1ST day 2ND day 3RD day 4TH day</p>	<p>2.4. Extra-terrestrial and terrestrial Radiati</p> <p>2.5. Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.</p> <p>2.6. Solar collectors, Types and performance characteristics,</p> <p>2.7. Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.</p>	<p><i>Con</i></p>

5 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	Wind Energy: 3.1. Introduction to Wind energy. 3.2. Wind energy conversion. 3.3. Types of wind turbines 3.4. Aerodynamics of wind rotors.
6 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	3.5. Wind turbine control systems; conversion to electrical power: 3.6. Induction and synchronous generators. 3.7. Grid connected and self excited induction generator operation.
7 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	3.8. Constant voltage and constant frequency generation with power electronic control. 3.9. Single and double output systems. 3.10. Characteristics of wind power plant
8 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	Biomass Power: 4.1. Energy from Biomass. 4.2. Biomass as Renewable Energy Source 4.3. Types of Biomass Fuels - Solid, Liquid and Gas. 4.4. Combustion and fermentation.
9 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	4.5. Anaerobic digestion. 4.6. Types of biogas digester. 4.7. Wood gassifier. 4.8. Pyrolysis, 4.9. Applications: Bio gas, Bio diesel
10 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	Other Energy Sources 5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems. 5.2. Ocean Thermal 5.3. Geothermal Energy – Classification. Energy

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		Conversion (OTEC).	Con
11 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	5.4. Hybrid Energy Systems. 5.5. Need for Hybrid Systems. 5.6. Diesel-PV, Wind-PV, Microhydel-PV. 5.7. Electric and hybrid electric vehicles	Con
12 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day	Class test for chapter 1&3	
13 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Class test for chapter 2	
14 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	Class test of chapter 4& 5	
15 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	REVISION FOR EXAM	
16 TH WEEK	1 ST day 2 ND day 3 RD day 4 TH day 5 TH day	REVISION FOR EXAM	

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