

**Academic lesson plan for summer semester-2024**

Name of the teaching faculty: Arabinda Pradhan  
Semester: **4th**  
No. of periods per week: **5**  
Semester Exam: **80**  
Total Marks: **100**

Discipline/Dept.: **EE**  
Subject(Theory): **EC-I**  
Total Periods: **75**  
Class Test: **20**

Week	Period	Unit/chapter	Topic to be covered
1 <sup>ST</sup>	1 <sup>st</sup>	DC GENERATORS	Introduction to EM. Operating principle of generator
	2 <sup>nd</sup>	DC GENERATORS	Constructional features of DC machine.
	3 <sup>rd</sup>	DC GENERATORS	Constructional features of DC machine.
	4 <sup>th</sup>	DC GENERATORS	Different type of D.C. machines
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Objective Questions related to Basics of DC generator.
2 <sup>ND</sup>	1 <sup>st</sup>	DC GENERATORS	Derivation of EM F equation
	2 <sup>nd</sup>	DC GENERATORS	Losses and efficiency. Condition for max efficiency
	3 <sup>rd</sup>	DC GENERATORS	Armature reaction in D.C. machine
	4 <sup>th</sup>	DC GENERATORS	Commutation and methods of improving commutation
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Problems Discussion on emf equation
3 <sup>RD</sup>	1 <sup>st</sup>	DC GENERATORS	Inter poles and compensating winding
	2 <sup>nd</sup>	DC GENERATORS	Characteristics of D.C. Generators
	3 <sup>rd</sup>	DCGENERATORS	Characteristics .Problem Discussion on losses Efficiency
	4 <sup>th</sup>	DC GENERATORS	Application of different types of D.C. Generators.
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Problems Discussion on losses efficiency
4 <sup>TH</sup>	1 <sup>st</sup>	DC GENERATORS	Concept of critical resistance and critical speed
	2 <sup>nd</sup>	DCGENERATORS	Conditions of Build-up of emf of DC generator
	3 <sup>rd</sup>	DC GENERATORS	Parallel operation of D.C. Generators.
	4 <sup>th</sup>	DC GENERATORS	Numerical problems on DC Generator
	5 <sup>th</sup>	TUTORIAL CUMDOUBTCLEAR CLASS	Doubt clear class related to DC generator.
5 <sup>TH</sup>	1 <sup>st</sup>	DC GENERATORS	Doubt clear class related to DC generator.
	2 <sup>nd</sup>	DC MOTORS	Basic working principle of DC motor
	3 <sup>rd</sup>	DC MOTORS	Significance of back emf in D.C.Motor.
	4 <sup>th</sup>	DC MOTORS	Voltage equation of D.C.Motor.
	5 <sup>th</sup>	TUTORIAL CUMDOUBTCLEAR CLASS	Problems Discussion on Back EMF.
6 <sup>TH</sup>	1 <sup>st</sup>	DC MOTORS	Condition for maximum power output
	2 <sup>nd</sup>	DC MOTORS	Torque Equation and Problems.
	3 <sup>rd</sup>	DC MOTORS	Characteristics of shunt, series and compound motors
	4 <sup>th</sup>	DC MOTORS	Application and Problems on output power.
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Objective Questions related to Basics of DC Motor.
7 <sup>TH</sup>	1 <sup>st</sup>	DC MOTORS	Starting method of shunt, series and compound
	2 <sup>nd</sup>	DC MOTORS	Speed control of D.C shunt motors
	3 <sup>rd</sup>	DC MOTORS	Speed control of D.C shunt motors and problems.
	4 <sup>th</sup>	DC MOTORS	Speed control of D.C. series motors
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Numerical problems on DC Motor.
8 <sup>TH</sup>	1 <sup>st</sup>	DC MOTORS	Determination of efficiency of D.C. Series Machine
	2 <sup>nd</sup>	DC MOTORS	Determination of efficiency of D.C. shunt Machine
	3 <sup>rd</sup>	DC MOTORS	Losses, efficiency and power stages of D.C. motor
	4 <sup>th</sup>	DC MOTORS	Uses of D.C. motors, Problems Discussion.
	5 <sup>th</sup>	TUTORIAL CUMDOUBTCLEAR CLASS	Doubt clear class related to DC Motor.
9 <sup>TH</sup>	1 <sup>st</sup>	SINGLE PHASE TRANSFORMER	Working principle of transformer.
	2 <sup>nd</sup>	SINGLE PHASE TRANSFORMER	Constructional feature of Transformer
	3 <sup>rd</sup>	SINGLE PHASE TRANSFORMER	Constructional feature of Transformer
	4 <sup>th</sup>	SINGLE PHASE TRANSFORMER	Constructional feature of Transformer
	5 <sup>th</sup>	TUTORIAL CUMDOUBT CLEAR CLASS	Objective and Doubt discussion
10 <sup>TH</sup>	1 <sup>st</sup>	SINGLE PHASE TRANSFORMER	Procedures for Care and maintenance
	2 <sup>nd</sup>	SINGLE PHASE TRANSFORMER	EMF equation of transformer
	3 <sup>rd</sup>	SINGLE PHASE TRANSFORMER	Ideal transformer voltage transformation ratio
	4 <sup>th</sup>	SINGLE PHASE TRANSFORMER	Operation of Transformer at no load with ph diagrams
	5 <sup>th</sup>	TUTORIAL CUM DOUBT CLEAR CLASS	Objective Question discussion on Basics of Transformer.

11 <sup>TH</sup>	1 <sup>st</sup>	SINGLE PHASE TRANSFORMER	Operation on load with phasor diagrams
	2 <sup>nd</sup>	SINGLE PHASE TRANSFORMER	Equivalent R, Leakage X and Z of transformer.
	3 <sup>rd</sup>	SINGLE PHASE TRANSFORMER	Phasor diagram of transformer on with using up of load
	4 <sup>th</sup>	SINGLE PHASE TRANSFORMER	phdiag. of transformer on with leading pf and lagging pf
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Problems Discussion on Phasor diagram
12 <sup>TH</sup>	1 <sup>st</sup>	SINGLE PHASE TRANSFORMER	Equivalent circuit and numerical problems Discussion
	2 <sup>nd</sup>	SINGLE PHASE TRANSFORMER	Approximate & exact voltage drop.
	3 <sup>rd</sup>	SINGLE PHASE TRANSFORMER	Voltage Regulation of transformer.
	4 <sup>th</sup>	SINGLE PHASE TRANSFORMER	Different types of losses in a Transformer
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Open circuit and Short Circuit test
13 <sup>TH</sup>	1 <sup>st</sup>	SINGLE PHASE TRANSFORMER	Efficiency, efficiency at different load and pf
	2 <sup>nd</sup>	SINGLE PHASE TRANSFORMER	Condition for max efficiency. Problems Discussion
	3 <sup>rd</sup>	SINGLE PHASE TRANSFORMER	All Day Efficiency & Problems Discussion.
	4 <sup>th</sup>	SINGLE PHASE TRANSFORMER	Load corresponding to Maximum efficiency
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Parallel operation of single phase transformer.
14 <sup>TH</sup>	1 <sup>st</sup>	AUTO TRANSFORMER	Constructional features & working of Auto transformer
	2 <sup>nd</sup>	AUTO TRANSFORMER	Comparison of A.T. with two winding transformer
	3 <sup>rd</sup>	AUTO TRANSFORMER	Uses of Auto transformer .Tap changing.
	4 <sup>th</sup>	INSTRUMENT TRANSFORMER	Current Transformer and Potential Transformer
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Doubt clear class related to Auto Transformer.
15 <sup>TH</sup>	1 <sup>st</sup>	INSTRUMENT TRANSFORMER	Ratio error ,Phase angle error.
	2 <sup>nd</sup>	INSTRUMENT TRANSFORMER	Uses of C.T. and P.T.
	3 <sup>rd</sup>	INSTRUMENT TRANSFORMER	Objective Question discussion on C.T.,P.T.,A.T.
	4 <sup>th</sup>	INSTRUMENT TRANSFORMER	Doubt clear class related to Instrument Transformer.
	5 <sup>th</sup>	TUTORIALCUMDOUBTCLEAR CLASS	Objective Question discussion on Electrical Machine.

The lesson plan prepared by the concerned faculty.

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