

BIT POLYTECHNIC SOMANATHPUR,BALASORE

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSONPLAN



SUBJECT :ENERGYCONVERSION -II

FACULTY :ER. SANGRAM DASH

ACADEMICSESSION:2025-26

SEMESTER:5TH

SECTION:A

Discipline: Electrical Engg.	Semester: 5th(A)	Prepared by-Er SANGRAM DASH
Subject- Energy Conversion-II	No. of Days/per week class allotted: 04 PERIODS/WEEK (TUE, WED, THUR, FRI-1 period each)	Semester: From Date: 01/07/2025 To Date: 08/11/2024 No. of weeks: 19 WEEKS
Week	Class Day	Theory Class
1 st (01/07/2025-06-07-2025)	02/07/2025	Introduction
	03/07/2025	1.ALTERNATOR: 1.1 Types of alternator and their constructional features
	04/07/2025	1.2 Basic working principle of alternator and the relation between speed and frequency.
	05/07/2025	1.3 Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor)
2 nd (08/07/2025-13/07/2025)	09/07/2025	1.3 Terminology in armature winding and expressions for winding factors (Pitch factor, Distribution factor)
	10/07/2025	1.4 Explain harmonics, its causes and impact on winding factor.
	11/07/2025	1.5 E.M. Fe equation of alternator. (Solve numerical problems).
	12/07/2024	1.5 E.M. Fe equation of alternator. (Solve numerical problems).
3 rd (15/07/2025-20/07/2025)	16/07/2025	1.5 E.M. Fe equation of alternator. (Solve numerical problems)
	19/07/2025	1.6. Explain Armature reaction and its effect on m_f at different power factor of load.

4 th (22/07/2025-27/07/2025)	23/07/2025	1.7Thevector diagramofloadedalternator.(Solve numerical).
	24/07/2025	1.8Testingofalternator(Solve numerical problems)1.8.1Opencircuittest.1.8.2Shortcircuittest
	25/07/2025	Opencircuittest. Shortcircuittest.
	26/07/2025	1.9Determinationofvoltage regulationofAlternatorbydirectloadingandsynchronous impedance method. (Solve numerical problems)
5 th (29/07/2024-03/08/2024)	30/07/2025	1.9Determinationofvoltage regulationofAlternatorbydirectloadingandsynchronous impedance method. (Solve numerical problems)
	31/07/2025	1.10Paralleloperationofalternatorusingsynchro-scopeanddark&bright
	01/08/2025	1.11Explaindistributionofloadbyparallelconnected alternators.
	02/08/2025	2. SYNCHRONOUS MOTOR: ConstructionalfeatureofSynchronousMotor.
6 th (05/08/2025-10/08/2025)	06/08/2025	Class Test-1
	07/08/2025	2.2Principlesofoperation,conceptof loadangle.
	08/08/2025	2.3Derivetorque,powerdeveloped
	09/08/2025	2.4Effectofvaryingloadwithconstant excitation.
7 th (12/08/2025-17/08/2025)	13/08/2025	2.5Effectofvaryingexcitationwithconstantload.2.6Poweranglecharacteristicsofcylindrical rotor motor
	14/08/2025	2.7ExplaineffectofexcitationonArmaturecurrentandpowerfactor.
	16/08/2025	2.8HuntinginSynchronousMotor. 2.9FunctionofDamperBarsinsynchronousmotorand generator
8 th (19/08/2025-24/08/2025)	20/08/2025	2.10DescribemethodofstartingofSynchronousmotor.2.11Stateapplicationofsynchronous motor.

	21/08/2025	3.THREEPHASEINDUCTIONMOTOR:
	22/08/2025	3.1Productionofrotatingmagneticfield
	23/08/2025	3.2ConstructionalfeatureofSquirrelcageandSlipringinductionmotors
9 th (26/08/2025-31-08/2025)	27/08/2025	3.3Workingprinciplesofoperationof3-phaseInductionmotor.
	28/08/2025	3.4Defineslipspeed,slipandestablishtherelationofslipwithrotorquantities
	29/08/2025	3.5 Derive expression for torque during starting and running conditions and derive conditions for maximum torque. (solve numerical problems)
	30/08/2025	3.6Torque-slipcharacteristics.
10 th (02/09/2025-07/09/2025)	03/09/2025	3.7Deriverelationbetweenfullloadtorqueandstartingtorqueetc.(solvenumericalproblems)
	04/09/2025	3.7Deriverelationbetweenfullloadtorqueandstartingtorqueetc.(solvenumericalproblems)
	05/09/2025	3.8EstablishtherelationsbetweenRotorCopperloss,RotoroutputandGrossTorqueand relationship of slip with rotor copper loss. (solve numerical problems)
	06/09/2025	3.8EstablishtherelationsbetweenRotorCopperloss,RotoroutputandGrossTorqueand relationship of slip with rotor copper loss. (solve numerical problems)
11 th (09/09/2025-14/09/2025)	10/09/2025	InternalAssessment
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	12/09/2025	3.8EstablishtherelationsbetweenRotorCopperloss,RotoroutputandGrossTorqueand relationship of slip with rotor copper loss. (solve numerical problems)
	13/09/2025	3.9Methodsofstartinganddifferenttypesofstarters usedforthreephaseInductionmotor.
12 th (16/09/2025-21/09/2025)	17/09/2025	3.10 Explain speed control by Voltage Control, Rotor resistance control, Pole changing, frequency control methods.
	18/09/2025	3.11Pluggingasapplicabletothreephaseinductionmotor.3.12Describedifferenttypesof motor enclosures.

	19/09/2025	4. SINGLEPHASEINDUCTIONMOTOR: ExplainFerrari'sprinciple.
	20/09/2025	4.2ExplaindoublerevolvingfieldtheoryandCross-fieldtheorytoanalyzestartingtorqueof 1- phase inductionmotor.
13 th (23/09/2025-28/09/2025)	24/09/2025	Quiz Test
	25/09/2025	4.3ExplainWorkingprinciple,Torquespeedcharacteristics,performance characteristicsand application of following single phasemotors.
	26/09/2025	4.3.1Splitphasemotor
	27/09/2024	4.3.2Capacitor Start motor. 4.3.3Capacitorstart,capacitorrunmotor
14 th (30/09/2025-05/10/2025)	01/10/2025	4.3.4Permanentcapacitortypemotor. 4.3.5Shadedpolemotor
	03/10/2025	4.4Explainthemethodtochangethe directionofrotationofabovemotors
	04/10/2025	5 COMMUTATORMOTORS: Construction,workingprinciple,runningcharacteristicandapplicationof singlephase series motor.
15 th (14/10/2025-19/10/2025)	15/10/2025	Construction,workingprinciple,runningcharacteristicandapplicationofsinglephase series motor.
	17/10/2025	5.2Construction,workingprincipleandapplicationofUniversalmotors.
	18/10/2025	5.3WorkingprincipleofRepulsionstartMotor,RepulsionstartInductionrunmotor,Repulsion Induction motor.
16 th (21/10/2025-26/10/2025)	22/10/2025	5.3Workingprincipleof RepulsionstartMotor,RepulsionstartInductionrunmotor, Repulsion Induction motor
	23/10/2024	ClassTest-2.
	24/10/2025	6. STEPPER MOTOR Principle of Steppermotor. 6.2ClassificationofSteppermotor.

	25/10/2025	6.3 Principle of variable reluctance stepper motor.
17 th (28/10/2025-02/11/2025)	29/10/2025	6.4 Principle of Permanent magnet stepper motor.
	30/10/2025	6.5 Principle of hybrid stepper motor. 6.6 Applications of Stepper motor
	01/11/2025	7. THREE PHASE TRANSFORMERS: Explain Grouping of winding, Advantages.
18 th (04/11/2025-08/11/2025)	05/11/2025	7.2 Explain parallel operation of the three phase transformers
	06/11/2025	7.3 Explain tap changer (On/Off load tap changing) 7.4 Maintenance Schedule of Power Transformers
	07/11/2025	PREVIOUS YEAR QUESTION DISCUSSION