Discipline: Electrical Engineering	SESSION-Winter	Name of the Teaching Faculty: Shri Deepak Patra, Lect.(S-II), Electrical Engg
Subject: TH:4- DC MACHINES AND TRANSFORMERS (DCMT)	No. of Days/week Class Allotted:45	**Semester- 3RD**
Week	**Class Day**	**Theory Topics**
1st	1st	**DC Generators** 1.1 D.C. generator: construction, parts, materials and their functions
	2nd	1.2 Principle of operation of DC generator 1.2.1 Fleming's right hand rule
	3rd	1.2.2 Derive the emf equation of DC Generator
2nd	1st	1.2.3 Schematic diagrams of different types of DC generator
	2nd	1.2.4 Armature reaction
	3rd	1.2.5 Commutation
3rd	1st	1.2.6 Applications of D.C. generators
	2nd	**D.C. Motors** 2.1 D.C. motor: Types of DC motors
	3rd	2.1.1 Fleming's left hand rule 2.1.2 Principle of operation of Back e.m.f. and its significance
4th	1st	2.1.3 Voltage equation of DC motor
	2nd	2.1.4 Torque and Speed; Armature torque, Shaft torque,
	3rd	BHP, Brake test
5th	1st	losses, efficiency
	2nd	**Single Phase Transformers** 3.1 Types of transformers: Shell type and core type
	3rd	3.2 Construction: Parts and functions

6th	1st	3.3 Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
	2nd	3.4 Transformer: Principle of operation
	3rd	3.5 EMF equation of transformer: Derivation, Voltage transformation ratio
7th	1st	3.6 Significance of transformer ratings 3.7 Transformer No-load and on-load phasor diagram, Leakage reactance
	2nd	3.8 Equivalent circuit of transformer: Equivalent resistance and reactance
	3rd	3.9 Voltage regulation and Efficiency: Direct loading
8th	1st	OC/SC method,
	2nd	All day efficiency
	3rd	**Three Phase Transformers** 4.1 Bank of three single phase transformers,(Y-Y,Δ-Δ ,Δ-Y, Y- Δ)
9th	1st	4.2 Single unit of three phase transformer 4.3 Distribution and Power transformers: Construction and cooling,
	2nd	4.4 Criteria for selection of distribution transformer, and power transformer.
	3rd	4.5 Need of parallel operation of three phase transformer 4.6 Conditions for parallel operation.
10th	1st	4.7 Polarity tests on mutually inductive coils and single phase transformers
	2nd	4.8 Polarity test, Phasing out test on Three-phase transformer
	3rd	**Special Purpose Transformers** 5.1 Single phase autotransformers: Construction, working and applications.
11th	1st	5.1 three phase autotransformers: Construction, working and applications.
	2nd	5.2 Isolation transformer: Constructional Features
	3rd	5.2 Isolation transformer: applications

12th	1st	Discussion of probable questions and answers-1
	2nd	Discussion of probable questions and answers-2
	3rd	Discussion of probable questions and answers-3
13th	1st	Discussion of probable questions and answers-4
	2nd	Discussion of probable questions and answers-5
	3rd	Discussion of probable questions and answer -6
14th	1st	Discussion of probable questions and answers-7
	2nd	Discussion of probable questions and answers-8
	3rd	Discussion of probable questions and answers-9
15th	1st	Discussion of probable questions and answers-10
	2nd	Discussion of probable questions and answers-11
	3rd	Discussion of probable questions and answers-12