EE205 Prerequisite : Course Object To give transformers analysis. Syllabus: Electromagneti Circuits for Ma single phase an and efficiency, Expected outc After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module	Course Name	L-T-P -Credits	Y Intr	ear of oduction					
Prerequisite :Course Object To give transformers analysis.Syllabus:ElectromagnetiCircuits for Masingle phase ar and efficiency,Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. famText Book 1. Bimbra 2. NagrathReference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. TheodoData Book (AModuleIImach eddy in the select	DC MACHINES AND TRANSFORMERS	3-1-0-4		2016					
Course Object To give transformers analysis. Syllabus: Electromagneti Circuits for Ma single phase an and efficiency, Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsda 3. Abhijith Delhi 20 4. Deshpat 5. Theodo Data Book (A Module	Prerequisite : Nil								
To give transformers analysis. Syllabus: Electromagneti Circuits for Ma single phase an and efficiency, Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module I mach eddy in the selece	Course Objectives								
transformers analysis. Syllabus: Electromagneti Circuits for Massingle phase and and efficiency, Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpas 5. Theodo Data Book (A Module Elect Elect Elect Module	To give exposure to the students about the concepts of direct current machines and								
analysis. Syllabus: Electromagnetii Circuits for Ma single phase an and efficiency, Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selece	s, including their constructional detail	s, principle of opera	tion and	performance					
Syllabus: Electromagneti Circuits for Ma single phase an and efficiency, Expected outc After th 1. iden 2. desc diffa 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsda 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selec	analysis.								
Electromagneti Circuits for Ma single phase an and efficiency, Expected outc After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module I mach eddy in the selec	Syllabus: AL ADDUL NALAIVI								
Circuits for Ma single phase an and efficiency, Expected outc After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module I mach eddy in the selec	ic principles for Machines, electrodyna	mic equations and th	eir solutio	on, Magnetic					
single phase ar and efficiency, Expected outce After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect Elect notice I mach eddy in the selec	achines, construction of DC machines,	DC generators, DC	motor, Tr	ansformers -					
and efficiency,Expected outcAfter th1. iden2. descdiffe3. anal4. desc5. anal6. famText Book1. Bimbra2. NagrathReference Boo1. Fitzgera2. Langsde3. AbhijithDelhi 204. Deshpar5. TheodoData Book (AModuleIImacheddyin theselecDC ganalCaracterCaracterCaracterCaracterCaracterAnterCaracter <td colspan="7">single phase and three phase, Construction of single phase and three phase transformers, losses</td>	single phase and three phase, Construction of single phase and three phase transformers, losses								
After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect Elect notio I mach eddy in the selecc DC g	, equivalent circuit, testing. Transformer	connections.							
After th 1. iden 2. desc diffe 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selecc DC g	come.	the standards will be als	1. 4.						
1.Iden2.descdiffe3.anal4.desc5.anal6.famText Book1.Bimbra2.NagrathReference Boo1.Fitzgera2.Langsdo3.AbhijithDelhi 204.Deshpar5.TheodoData Book (AModuleImacheddyin theselectDC sDC sconverse	te successful completion of this course,	the students will be at	le to						
2. dest diffé 3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect Elect I mach eddy in the selec	1. Identify dc generator types, and appreciate their performance								
3. anal 4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect Elect I mach eddy in the selec DC s	2. describe the principle of operation of dc motor and select appropriate motor types for								
4. desc 5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selecc DC s	lyse the performance of different types	of de motors							
5. anal 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selecc DC g	cribe the principle of operation of single	hase transformers							
6. fam 6. fam Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selecc DC g	lyse the performance of single phase tra	nsformers							
Text Book 1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect I motio I mach eddy in the selecc DC g	iliarize with the principle of operation	and performance of the	ree phase	ransformers.					
1. Bimbra 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdd 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module I mach eddy in the selec			I						
 2. Nagrath Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Module I Elect I math eddy in the select DC	a P. S., <i>Electrical Machinery</i> , 7/e, Khanr	na Publishers, 2011.							
Reference Boo 1. Fitzgera 2. Langsdo 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selecc DC g	2. Nagrath J. and D. P. Kothari, <i>Theory of AC Machines</i> , Tata McGraw Hill, 2006.								
 Fitzgera Langsde Abhijith Delhi 20 Deshpari Theodo Theodo Data Book (A Module Module I Elect I mach eddy in the DC g	Reference Books								
2. Langsde 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Elect Elect Elect motion I mach eddy in the selecc DC g	1. Fitzgerald A. E., C. Kingsley and S. Umans, <i>Electric Machinery</i> , 5/e, McGraw Hill, 1990.								
 3. Abhijith Delhi 20 4. Deshpar 5. Theodo Data Book (A Module Module Elect Elect motion I mach eddy in the select DC g	2. Langsdorf M. N., Theory of Alternating Current Machinery, Tata McGraw Hill, 2001.								
4. Deshpar 5. Theodo Data Book (A Module Elect Elect motion I mach eddy in the select DC g	3. Abhijith Chakrabarti, Sudipta Debnath, Electrical Machines, McGraw Hill Education, New								
5. Theodo Data Book (A Module Elect Elect motio I mach eddy in the selec	ande M. V., <i>Electrical Machines</i> , Prentic	e Hall India. New Del	hi. 2011.						
Data Book (AModuleElectElectElectmotionImacheddyin theselectDCgame	5 Theodore Wilde Electrical Machines Drives and Power System Pearson Ed Asia 2001								
Module Elect Elect motio I mach eddy in the selec DC g	Approved for use in the examination):	Nil							
Module Elect Elect motion I mach eddy in the select DC g	Course Plan								
I mach eddy in the selec	Contents		Hours	Semester Exam Marks					
I mach eddy in the selec	tromagnetic principles for Machines								
I motion I mach eddy in the select DC g	tro dynamical equations and their sol	ution – rotational							
I mach eddy in the selec DC g	on system – mutually coupled coils – c	construction of DC							
eddy in the selec DC	hines – energy conversion in rotating ele	ectrical machines –	9 hours	15%					
in the selec	v currents and eddy current losses – flux	distribution curve							
	e airgap – armature windings – lap and	l wave windings –							
	ction criteria – equalizer rings – dummy	colls.							
0.010.01	generators – EMF equation – method	is of excitation –							
separ	rately and self excited – shunt, ser	ture reaction							
II arma	uure reaction – effects of arma	ampere turns	9 hours	15%					
	agnetizing & cross magnetizing	ampere-turns –							
to in	mprove commutation – voltage hu	ild-up = no load							
II arma dema	v currents and eddy current losses – flux a airgap – armature windings – lap and <u>stion criteria – equalizer rings – dummy</u> generators – EMF equation – method rately and self excited – shunt, ser ature reaction – effects of arma agnetizing & cross magnetizing	distribution curve l wave windings – coils. ds of excitation – ies, compound – ture reaction – ampere-turns –	9 hours	15%					

	characteristics – load characteristics – losses and efficiency –					
	power flow diagram – parallel operation – applications of dc					
FIRST INTERNAL EXAMINATION						
III	DC motor – principle of operation – back emf – classification – torque equation – losses and efficiency – power flow diagram – performance characteristics of shunt, series and compound motors – starting of dc motors – necessity and types of starters – speed control – methods of speed control – testing – Swinburne's test – Hopkinson's test – separation of losses – retardation test – applications of dc motors.			15%		
IV	 Transformers – principle of operation – types and construction, core type and shell type construction, dry type transformers, cooling of transformers – ideal transformer – transformation ratio – dot convention – polarity test – practical transformer – kVA rating – equivalent circuit – phasor diagram. 		ırs	15%		
SECOND INTERNAL EXAMINATION						
V	Transformer losses and efficiency – voltage regulation – OC & SC test – Sumpner's test – all day efficiency Autotransformer – saving of copper – current rating and kVA rating of autotransformers, parallel operation of single phase transformers, necessary and desirable conditions of parallel operation, on load and off load tap changers.	9 hoi	ırs	20%		
VI	3-phase transformer – 3-phase transformer connections – Δ - Δ , Y-Y, Δ -Y, Y- Δ , V-V – vector groupings Yy0, Dd0, Yd1, Yd11, Dy1, Dy11 – Scott connection – three winding transformer – tertiary winding – percentage and per unit impedance – parallel operation of three phase transformers.	9 hoi	ırs	20%		
END SEMESTER EXAM						

QUESTION PAPER PATTERN (End semester exam)

Part A: 8 questions.

One question from each module of Module I - IV; and two each from Module V & VI. Student has to answer all questions. (8 x5)=40

Part B: 3 questions uniformly covering modules I&II Student has to answer any 2 questions: $(2 \times 10) = 20$

Part C: 3 questions uniformly covering modules III&IV Student has to answer any 2 questions: $(2 \times 10) = 20$

Part D: 3 questions uniformly covering modules V&VI Student has to answer any 2 questions: $(2 \times 10) = 20$

Note: Each question can have maximum of 4 sub questions, if needed.