EEE 6th Sem Lesson Plan

Week	Power Electronics-II	No. of Lectures planned	No of Lectures Delivered
1	Classification of choppers, principle of operation, steady state analysis of class A choppers, step up chopper, steady state,	3	
2	switching mode regulator: buck, boost, buck-boost, cuk regulators, current commutated and voltage communicated chopper,	2	
3	basic scheme, output voltage control techniques, one, two and four quadrant choppers, step up chopper, voltage commutated chopper,	3	
4	current commutated chopper, MOSFET and transistor based choppers.	3	
5	Classification, basic series and improved series inverter, parallel inverter, single phase voltage source inverter, steady state analysis,	2	
6	half bridge and full bridge inverter: modified Mc Murray and modified Mc Murray Bedford inverter, voltage control in single phase inverters,	3	
7	Basic circuit, 120 degree mode and 180 degree mode conduction schemes, modified McMurray-Bedford half bridge and bridge inverters, brief description of parallel and series inverter	3	
8	PWM inverters reduction of harmonics, current source, three phase bridge inverter. Inverters:	3	
9	Basic principles of frequency conversion, types of cycloconverters, non-circulating and circulating types of cycloconverters.	3	
10	Classification, principle of operation of step up and step down cycloconverter, single phase to single phase cycloconverter with resistive and inductive load..	3	
11	Three phase to three phase cycloconverter. Output voltage equation of cycloconverter	2	
12	Switched mode power supplies, AC Regulators , UPS ,static switches ,solid state relays, static circuit breakers A.C.	3	

13	Regulators, electric welding ,electric heating, battery charging, illumination control ,FACTs devices, zero voltage switch, over voltage protection, HVDC System	3	

Week	Microprocessor & Interfacing	No. of Lectures planned	No of Lectures Delivered
1	Evaluation of microprocessors, technological trends in microprocessor development.	3	
2	The Intel family tree, CISC Versus RISC, Applications of Microprocessors	2	
3	8086 CPU ARCHITECHTURE: 8086 Block diagram; description of data registers, address registers; pointer and index registers, PSW,	3	
4	, 8086 minimum mode and maximum mode CPU module.	3	
5	Queue, BIU and EU. 8086 Pin diagram descriptions, Generating 8086 CLK and reset signals using 8284. WAIT state generation, microprocessor BUS types and buffering techniques	2	
6	8086 INSTRUCTION SET: Instruction formats, addressing modes, Data transfer instructions, string instructions, logical instructions, arithmetic instructions,	3	
7	transfer of control instructions; process control instructions; Assembler directives. 8086 PROGRAMMING TECHNIQUES: Writing assembly language programs for logical processing,	3	
8	arithmetic processing, timing delays; loops, data conversions, writing procedures: data tables, modular programming and macros.	3	
9	MIAN MEMORY SYSTEM DESIGN: Memory devices, 8086 CPU Read/Write timing diagrams in minimum mode and maximum mode.	3	
10	Address decoding techniques. Interfacing SRAMS; ROMS/PROMS. Interfacing and refreshing DRAMS. DRAM Controller – TMS4500	3	
11	: Parallel and Serial I/O Port design and address decoding, Memory mapped I/O Vs Isolated I/O Intel's 8255 and 8251 – description and interfacing with 8086. ADCs and DACs, -types, operation and interfacing with 8086.	2	

12	Interfacing keywords, alphanumeric displays, multiplexed displays and high power devices with 8086.	3	
13	INTERRUPT & DMA: Interrupt driven I/O. 8086 interrupt mechanism; interrupt types and interrupt vector table. Intel's 8259. DMA operation. Intel's 8237.	3	

Week	Microcomputer video displays	No. of Lectures planned	No of Lectures Delivered
1	8 questions of 15 marks each distributed in four sections are to be set taking two from each unit.	3	
2	The candidate is required to attempt five questions in all,	2	
3	taking at least one from each of the four sections.	3	
4	Characteristics & representation of components of a power system, synchronous machines, transformers,	3	
5	lines cables & loads. Single line diagram of a power system Flow of zero sequence current , zero sequence impedance diagrams of power system with different types of connections of three phase transformers	2	
6	Neutral grounding need for neutral grounding, various types of neutral grounding	3	
7	Flow of zero sequence current, zero sequence impedance diagrams of power system with different types of connections of three phase transformers	3	
8	Circuit Interruption : Circuit interruption, theory of arc formation and it's excitation in d.c., a.c. circuits, restriking & recovery voltage, interruption of capacitive & in	3	
9	ductive currents. Rupturing capacity & rating of circuit breakers. Circuit-Breakers : Classification of circuit-breakers, circuit-breakers of low medium, high & extra high voltages. Multibreak & resistance switching. Auto-restoring of high capacity & H.V. circuit breakers.	3	

10	Symmetrical faults: calculation of fault currents, use of current limiting reactors. Unsymmetrical faults: Types of transformation in power system analysis, symmetrical components transformation, sequence impedance of power system	3	
11	elements, Sequence network of power system analysis of unsymmetrical short faults , Network analysis & it's application to interconnected system.	2	
12	`Protective System features of good protective system, elements of relay, terms connected with relay,time grading of over current protection., differential relay, distance or impedence relay, static relays (elementary idea)	3	
13	Protection of alternators, transformer, bus-bar, lines	3	

Week	Electrical Machines Design	No. of Lectures planned	No of Lectures Delivered
1	General features , limitations of electrical machine design, specific loadings thermal design types of enclosures, ventilation, heat dissipation, temperature rise, heating & cooling cycles, rating of machines	3	
2	, cooling media used, advantages of hydrogen cooling, effect of size and ventilation.	2	
3	DC MACHINES: Main parts ,Output equation, choice of specific loadings, choice of poles and speed, Design of core length, armature diameter, depth of armature core ,	3	
4	air gap length, cross section of armature conductors, armature slots,design of field system field poles, field coils, commutater.	3	
5	TRANSFORMERS: Main parts of transformer, Standard specifications, output equation, voltage per turn ,	2	
6	optimum design, design of core , design of winding, simplified steps for transformer design, tank and Cooling tubes, Operating calculations circuit parameters, magnetizing current, losses and efficiency,	3	

7	Temperature rise and regulations from design data. SYNCHRONOUS MACHINES: Types of construction, types of synchronous alternators Specifications, output equation , design of salient pole machines main dimensions,	3	
8	short circuit ratio , length of air gap, choice of armature slots, turns per phase, conductor section , design difference between turbo alternator & salient pole generators, , direct & indirect cooling.	3	
9	Three Phase Induction Motor: Standard specifications, output equations, choice of specific loadings, main dimensions, conductor size and turns, no. of slots,	3	
10	slot design, stator core depth, rotor design, rotor bars& slots area, end rings .	3	
11	SINGLE PHASE INDUCTION MOTOR: output equations, specific loadings, main dimensions, design of main and auxiliary winding, capacitor design, equivalent circuit parameters, torque, efficiency.	2	
12	COMPUTER AIDED DESIGN: Computerization of design procedures,	3	
13	development of computer programs & performance predictions, optimization techniques & their application to design problems.	3	