Lesson Plan

Name of the Faculty : **Ms. Poonam**

Discipline : **Electrical Engineering**

Semester : **5th Semester**

Subject : **ENVIRONMENTAL EDUCATION**

Lesson Plan Duration : **15-16 Week**

Week	Theory		Practical
	Lecture Day	Topic (including assignment / test)	Practical Day
1	2	Introduction to the subject and syllabus	
	3	Definition, Scope Environmental Education	
	4	Revision of topics, already covered	
2	5	Importance of Environmental Education	
	6	Basics of ecology,	
	7	Biodiversity,	
	8	Revision of topics, already covered	
3	9	Eco system	
	10	Sustainable development	
	11	Sources of pollution	
	12	Revision of topics, already covered	
4	13	Natural causes,	
	14	Manmade, causes,	
	15	Effects and control measures of pollution (air) and units of measurement	
	16	Revision of topics, already covered	
5	17	Effects and control measures of pollution (water) and units of measurement	
	18	Effects and control measures of pollution (noise) and units of measurement	
	19	Effects and control measures of pollution (soil) and units of measurement	
	20	Revision of topics, already covered	
6	21	Effects and control measures of pollution (radioactive) and units of measurement	
	22	Effects and control measures of pollution (nuclear) and units of measurement	
	23	Solid waste management – Causes	
	24	Revision of topics, already covered	
7	25	Effects and control measures of urban and industrial waste	
	26	Mining and deforestation – Causes,	
	27	Effects and control measures of Mining and deforestation	
	28	Revision of topics, already covered	
8	29	Environmental Legislation - Water (prevention and control of pollution) Act 1974	
	30	Environmental Legislation - Water (prevention and control of pollution) Act 1974 Continued	
	31	Air (Prevention and Control of Pollution) Act 1981	
	32	Revision of topics, already covered	
9	33	Environmental Protection Act 1986	

	34	Environmental Protection Act 1986 Continued	
	35	Environmental Protection Act 1986 Continued	
	36	Revision of topics, already covered	
10	37	Role and Function of State Pollution Control Board	
	38	Environmental Impact Assessment (EIA)	
	39	Environmental Impact Assessment (EIA) Continued	
	40	Revision of topics, already covered	
11	41	Role of Non-conventional Energy Resources	
	42	Solar Energy	
	43	Wind Energy	
	44	Revision of topics, already covered	
12	45	Bio Energy	
	46	Hydro Energy	
	47	Current Issues in Environmental Pollution	
	48	Revision of topics, already covered	
13	49	Global Warming	
	50	Green House Effect	
	51	Depletion of Ozone Layer	
	52	Revision of topics, already covered	
14	53	Recycling of Material	
	54	Environmental Ethics	
	55	Rain Water Harvesting	
	56	Revision of topics, already covered	
15	57	Maintenance of Groundwater	
	58	Acid Rain	
	59	Carbon Credits.	
	60	Revision of topics, already covered	

Lesson Plan

Name of the Faculty : **SONIA JOSHI**

Discipline : **Electrical Engineering**

Semester : **5th Semester**

Subject : **Electrical Machines-II**

Lesson Plan Duration : **15-16 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1st	1	Unit1: Introduction Synchronous Machines	1	Demonstration of revolving field set up by a 3-phase wound stator
	2	Constructional features of synchronous machine		
	3	Generation of three phase emf		
	4	Production of rotating magnetic field in a three phase winding		
	5	Revision/ Review of above Topics		
2nd	1	Concept of distribution and coil span factor	2	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
	2	Drive Emf equation, synchronous speed		
	3	Armature reaction at unity, lag and lead power factor		
	4	Voltage regulation using synchronous impedance method		
	5	Revision/ Review of Topics		
3rd	1	Need and necessary conditions of parallel operation of alternators	3	Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed
	2	Operation of synchronous machine as a motor –its starting methods		
	3	Effect of change in excitation of a synchronous motor		
	4	Concept and Cause of hunting and its prevention		
	5	Revision/ Review of above Topics		
4th	1	Rating and cooling of synchronous machines	4	Revision/ file checking
	2	Applications of synchronous machines (as an alternator, as a synchronous condenser)		

	3	Revision of important topics		
	4	Assignment / Class test		
	5	Revision/ Review of above Topics		
5th	1	Problem solution/ test check	5	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	2	Unit2: Introduction to Induction Motors		
	3	constructional features of squirrel cage and slip ring 3-phase induction Motors		
	4	Principle of operation, slip and its significance		
	5	Revision/ Review of above Topics		
6th	1	Locking of rotor and stator fields	6	Synchronization of polyphase alternators and load sharing
	2	Rotor resistance, inductance		
	3	Emf Equation and current relations		
	4	Relationship between copper loss and motor slip		
	5	Revision/ Review of above Topics		
7th	1	Power flow diagram of an induction motor	7	Determination of the effect of variation of excitation on performance of a synchronous motor
	2	Factors determining the torque, Torque-slip curve, stable and unstable zones		
	3	Effect of rotor resistance upon the torque slip relationship		
	4	Double cage rotor motor and its applications		
	5	Revision/ Review of above Topics		
8th	1	Starting of 3-phase induction motors, DOL	8	Study of ISI/BIS code for 3-phase induction motors
	2	Star-delta, auto transformer starting		
	3	Causes of low power factor of induction motors		
	4	Testing of 3-phase induction motor on no load		
	5	Revision of Unit No-01		
9th	1	And blocked rotor test and to find efficiency	9	Revision/ file checking
	2	Speed control of induction motor		
	3	Harmonics and its effects		
	4	cogging and crawling in Induction Motors		
	5	Revision of Unit No-01		

10th	1	Revision of important topics	10	Determination of efficiency by (a) no load test and blocked rotor test on an induction motor
	2	Assignment / Class test		
	3	Problem solution/ ClassTest check		
	4	Unit3: Fractional Kilo Watt (FKW) Motors		
	5	And its description		
11th	1	Single phase induction motors	11	Determination of effect of rotor resistance on torque speed curve of an induction motor
	2	Construction characteristics and applications		
	3	Nature of field produced in single phase induction motor		
	4	Split phase induction motors		
	5	Type of Induction Motor		
12th	1	Capacitors start and run		
	2	Shaded pole, Reluctance start motor	12	Revision/ file checking
	3	Alternating current series motor and universal motors		
	4	1-phase synchronous motor Reluctance type		
	5	Brief description about Synchronous Motor		
13th	1	Hysteresis motor	13	To study the effect of a capacitor on the single phase induction motor to reverse the direction of rotation.
	2	Revision of important topics		
	3	Assignment / Class test		
	4	Problem solution/ test check		
	5	Revision of important topics		
14th	1	Unit4:Special Purpose Machines		
	2	Construction and working principle of linear induction motor		
	3	stepper motor		
	4	Servomotor		
	5	Revision of important topics		
15th	1	submersible motor		
	2	introduction to energy efficient motors		

Lesson Plan

Name of the Faculty : **Mr. Manoj**

Discipline : **Electrical Engineering**

Semester : **5th Semester**

Subject : **ELECTRICAL POWER –I**

Lesson Plan Duration : **15-16 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Main resources of energy		
	2	Conventional and non-conventional		
	3,4	Different types of power stations, thermal, hydro, gas		
	5	Diesel and nuclear power stations		
	6	Flow diagrams and brief details of their operation, Comparison of the generating stations on the basis of running cost, site, starting, maintenance		
	7	Importance of non-conventional sources of energy in the present scenario		
	8,9	Brief details of solar energy, bio-energy, wind energy		
	10	Fixed and running cost		
	11	Load estimation, load curves, demand factor		
	12	Load factor, diversity factor, power factor and their effect on cost of generation, simple problems there on		
	13	Base load and peak load power stations, inter-connection of power stations and its advantages, concept of regional and national grid		
	14	Layout of transmission system, selection of voltage for H.T and L.T lines, advantages of high voltage for Transmission of power in both AC and DC		
	15	Comparison of different systems: AC versus DC for power transmission		
	16	Conductor material and sizes from standard tables		

	17	Types of supports, types of insulators		
	18	Types of conductors, Selection of insulators, conductors, earth wire and their accessories		
	19	Transposition of conductors and string efficiency of suspension type insulators, Bundle Conductors		
	20	Mechanical features of line: Importance of sag, calculation of sag		
	21	Effects of wind and ice related problems; Indian electricity rules pertaining to clearance		
	22	Electrical features of line: Calculation of resistance inductance and capacitance without derivation in a.c. transmission line, voltage regulation, and concept of corona.		
	23	Effects of corona and remedial measures		
	24	Transmission Losses		
	25	Lay out of HT and LT distribution system		
	26	Constructional feature of distribution lines and their erection		
	27	LT feeders and service mains; Simple problems on AC radial distribution system, determination of size of conductor		
	28	Preparation of estimates of HT and LT lines (OH and Cables).		
	29	Constructional features of LT (400 V), HT (II kV) underground cables, advantages and disadvantages of underground system with respect to overhead system		
	30	Calculation of losses in distribution system		
	31	Faults in underground cables-determine fault location by Murray Loop Test		
	32	Varley Loop Test		
	33	Brief idea about substations; out door grid sub-station 220/132 KV, 66/33 KV outdoor substations		
	34	Pole mounted substations and indoor substation		
	35	Layout of 33/11 and kV/400V distribution substation and various auxiliaries and equipment associated with it		
	36	Concept of power factor		

	37	Reasons and disadvantages of low power factor		
	38	Methods for improvement of power factor using capacitor banks		
	39	VAR Static Compensator (SVC)		

Lesson Plan

Name of the Faculty : **SONIA JOSHI**

Discipline : **Electrical Engineering**

Semester : **5th Semester**

Subject : **DIGITAL ELECTRONICS AND MICROPROCESSORS**

Lesson Plan Duration : **15-16 Week**

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical Day**	**Topic**
	1	Decimal, binary, octal, hexa-decimal BCD and ASCII code number systems	1	Verification and interpretation of truth table for AND, OR, NOT, NAND, NOR, X-OR gates
	2	Their inter-conversion	2	Construction of Half Adder/Full Adder using gates
	3	Binary and Hexadecimal addition	3	To verify the truth table for R-S and JK flipflop
	4	Subtraction and multiplication	4	Construction and testing of any counter
	5,6	1's and 2's complement methods of addition/subtraction	5	Verification of operation of a 8-bit D/A Converter
	7,8,9,10	Gates Definition, symbol and truth tables for inverter, OR, AND, NAND, NOR and X-OR exclusive-AND gates	6	Writing assembly language programme using numemoanics and test them on μP Kit Addition of two 8-bit numbers
	11, 12	Boolean Relations and their applications	7	Writing assembly language programme using numemoanics and test them on μP Kit Subtraction of two 8-bit numbers
	13	DeMorgan's Theorems	8	Writing assembly language programme using numemoanics and test them on μP Kit Multiplication of two 8-bit numbers
	14,15,16	K-Map upto four variables	9	Writing assembly language programme using numemoanics and test them on μP Kit Division of two 8-bit numbers
	17,18	Half adder, Full adder	10	Writing assembly language programme using numemoanics and test them on μP Kit

				Finding average of N given integer
	19,20	Encoder, Decoder	11	Writing assembly language programme using numemoanics and test them on μP Kit Finding maximum number out of three given numeric
	21,22	Multiplexer/Demultiplexer	12	Writing assembly language programme using numemoanics and test them on μP Kit Assembly language programming for different applications on 8051 microcontroller
	23,24	Display Devices (LED, LCD and 7-segment display)		
	25	J-K Flip-Flop		
	26	R-S Flip-Flop		
	27	D-Type Flip-Flop		
	28	T-Type Flip-Flop		
	29	Applications of Flip-Flops		
	30 to 32	Introduction to Shift Registers and Counters		
	33 to 35	A/D converter (Counter ramp, successive approximation method of A/D Conversion)		
	36 to 38	D/A converters (Binary weighted, R-2R D/A Converter)		
	39 to 41	Semi-conductor Memories, Types, merits, demerits, and applications		
	42 to 50	Study of 8085 microprocessor architecture, pin configuration, bus organisation, registers flags, interrupts		
	51-57	Instruction set of 8085 microprocessor, addressing modes, instruction format. Writing some simple assembly language programmes including debugging. Use of stacks and sub-routines in programming		
	58,59	Interfacing and data transfer between peripheral, I/O and microprocessor		
	60,61	Study of peripheral chips – 8251, 8155, 8051, 8257, 8259		
	62,63	Introduction of 16-bit, 32-bit microprocessor, their advantages over 8-bit microprocessor		

Lesson Plan

Name of the Faculty : **DEEPAK GAUTAM**

Discipline : **Electrical Engineering**

Semester : **5thSemester**

Subject : **INDUSTRIAL ELECTRONICS AND CONTROL OF DRIVES**

Lesson Plan Duration : **15-16 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Construction and working principles of an SCR	1	To draw V-I characteristics of an SCR
	2	Two transistor analogy and characteristics of SCR	2	To draw V-I characteristics of a TRIAC
	3	SCR specifications and rating	3	To draw V-I characteristics of a DIAC
	4	Construction, working principles and V-I characteristics of DIAC	4	To draw uni-junction transistor characteristics
	5	TRIAC and Quadriac	5	Observe the output wave of an UJT relaxation oscillator
	6	Basic idea about the selection of heat sinks for SCR and TRIACS	6	Observe the wave shape across SCR and load of an illumination control circuit
	7,8	Methods of triggering a Thyristor. Study of triggering circuits	7	Fan speed regulator using TRIAC Quadriac (fabrication of this circuit)
	9	UJT, its Construction, working principles and V-I characteristics, UJT relaxation oscillator	8	Speed-control of a DC shunt motor or universal motor
	10	Commutation of Thyristors (Concept)	9	To observe the output wave shape on CRO of a Single phase half controlled full wave rectifier
	11	Series and parallel operation of Thyristors	10	Single phase controlled rectifier
	12	Applications of SCR	11	Use of Variable Frequency Drive for running a 3 phase Induction motor

	13	TRIACS and Quadriac such as light intensity control		
	14, 15	Speed control of DC and universal motor, fan regulator, battery charger etc.		
	16	dv/dt and di/dt protection of SCR.		
	17,18	Single phase half wave controlled rectifier with resistive load and inductive load, concept of free wheeling diode		
	19	Single phase half controlled full wave rectifier (No mathematical derivation)		
	20	Single phase fully controlled full wave rectifier bridge (Workshops only)		
	21	Single phase full wave centre tapped rectifier (Workshops only)		
	22	Three phase full wave half controlled bridge rectifier (Workshops only)		
	23	Three phase full wave fully controlled bridge rectifier (Workshops only)		
	24	Inverter-introduction, working principles		
	25, 26	Voltage and current driven series and parallel inverters and applications		
	27	Choppers-introduction		
	28,29	Types of choppers and their working principles and applications		
	30,31	Dual converters-introduction, working principles and applications		
	32,33,34	Cyclo-converters- introduction, types, working principles and applications		
	35	DC drives control (Basic Concept)		
	36	Half wave drives		
	37,38	Full wave drives		
	39	Chopper drives		
	40,41	AC drives control		
	42	Phase control		
	43	Variable frequency a.c. drives		
	44	Constant V/F application		
	45,46	Voltage controlled inverter drives		
	47	Constant current inverter drives		
	48,49	Cyclo convertors controlled AC drives		
	50	Slip control AC drives		
	51,52	UPS		
	53,54	Stabilizers		
	55,56	SMPS		
	57,58	UPS online, off line		
	59,60	Storage devices (batteries) and their maintenance		