LESSON PLAN

Name of Faculty : Preeti Girdhar

Discipline : Electrical Engg.

Semester : 5th

Subject : Digital Electronics and Microprocessors

Work Load : 15 weeks(from July, 2018 November, 2018)

Week	Lecture day	Theory (Including Assignments and Tests)
1	1	Number Systems
	2	Decimal, binary, octal, hexa-decimal
	3	BCD and ASCII code number systems and their inter-conversion
	4	Binary and Hexadecimal addition, subtraction and multiplication
	5	1's and 2's complement methods of addition/subtraction
2	6	Gates
	7	Definition, symbol and truth tables for inverter
	8	OR, AND, NAND, NOR and X-OR exclusive-AND gates
	9	Revision
	10	Revision and Test
3	11	Boolean Algebra
	12	Boolean Relations and their applications
	13	DeMorgan's Theorems
	14	K-Map upto four variables
	15	Revision
4	16	Combinational Circuits
	17	Half adder
	18	Full adder
	19	Encoder
	20	Decorder
5	21	Multiplexer/Demultiplexer
	22	Display Devices (LED, LCD and 7-segment display)
	23	Display Devices (LED, LCD and 7-segment display)
	24	Revision
	25	Revision and Test
6	26	Flip-Flops
	27	J-K Flip-Flop
	28	R-S Flip-Flop
	29	D-Type Flip-Flop
	30	T-Type Flip-Flop
7	31	Applications of Flip-Flops
	32	Introduction to Shift Registers
	33	Introduction to Counters
	34	Revision
	35	Revision & Test
8	36	A/D and D/A Converters
	37	A/D converter (Counter ramp, successive approximation method of A/D Conversion)
	38	D/A converters (Binary weighted, R-2R D/A Converter)

	39	Revision
	40	Revision & Test
9	41	Semi-conductor Memories
	42	Types, merits, demerits, and applications
	43	Revision
	44	Revision
	45	Revision & Test
10	46	Microprocessor
	47	Study of 8085 microprocessor architecture
	48	Study of 8085 microprocessor architecture
	49	Pin configuration, bus organisation, registers flags, interrupts
	50	Revision
11	51	Instruction set of 8085 microprocessor,
	52	addressing modes, instruction format
	53	Writing some simple assembly language programmes including debugging
	54	Use of stacks and sub-routines in programming
	55	Revision
12	56	Interfacing and data transfer between peripheral
	57	I/O and microprocessor
	58	Revision
	59	Revision & Test
	60	Revision & Test
13	61	Study of peripheral chips – 8251
	62	Study of peripheral chips – 8155
	63	Study of peripheral chips – 8051
	64	Revision
	65	Revision & Test
14	66	Study of peripheral chips – 8257
	67	Study of peripheral chips – 8263
	68	Introduction of 16-bit
	69	Revision
	70	Revision & Test
15	71	32-bit microprocessor
	72	their advantages over 8-bit microprocessor
	73	Revision
	74	Revision & Test
	75	Revision & Test

LESSON PLAN

Name of Faculty : Narsingh Parmar

Discipline : ELECTRICAL ENGG

Semester : 5th

Subject : Digital Electronics and Microprocessors

Work Load : 03 per week

Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	PRACTICAL
PRACTICAL DAY	
1	Verification and interpretation of truth table for AND, OR, NOT, NAND, NOR, X-OR gates
2	Construction of Half Adder/Full Adderusing gates
3	To verify the truth table forR-S andJK flipflop
4	Constructionand testingof any counter
5	Verification of operation of a 8-bit D/Aconverter
6	Writing assembly language programme using numemoanics and test them on ?P Kit (any three) a) Addition of two 8-bit numbers
7	Subtraction of two 8-bit numbers
8	Multiplication of two 8-bit numbers
9	Division of two 8-bit numbers
11	Finding maximum number out of three given numeric
12	Assembly language programming for different applications on 8051 microcontroller
13	Revision
14	Revision
15	Revision

LESSON PLAN

Name of Faculty : Narsingh Parmar
Discipline : ELECTRICAL ENGG
Semester : 5th
Subject : Environment Education
Work Load : Lab-3/weak

Week	Day	Theory
1	1	Classification of materials into conducting, semi conducting and insulating materials based on (a) atomic structure
	2	Energy bands
	3	Conduction materials- Introduction
	4	Resistance and factors affecting it such as alloying and temperature etc.
2	5	Classification of conducting material as low resistivity and high resistivity materials:
	6	To study the following properties of Copper, Aluminium and steel: Resistivity, temperature coefficient, density
	7	Machnical properties of hard-drawn and annealed metal, corrosion, contact resistance
	8	Application in the field of electrical engineering
3	9	Low resistivity copper alloys: Brass, Bronze (cadmium and berylium),
	10	Their practical applications with reasons for the same
	11	Application of special metal e.g. Silver, gold, platinum etc.
	12	High resistivity materials and their applications e.g. Manganin, constranin, nichrome, mercury, platinum, carbon and tungsten, tantalum.
4	13	Introduction to bundle conductors and its applications
	14	Superconductors and their applications
	15	Semi-conducting materials- Gemanium (Gi), silicon (Si) and carbon (C)
	16	Their atomic structure, types of semiconductors and their appllications
5	17	Insulting materials-General Properties:
	18	Electrical Properties-Volume resistivity,
	19	surface resistance
	20	Dielectric loss, dielectric strength
6	21	(Breakdown voltage), dielectric constant
	22	Physical properties- Hygroscopicity
	23	Tensile and compressive strength
	24	Abrasive resisitance, britteness
7	25	Thermal Properties- Heat resistance, classification according to permissile temperature rise.
	26	Effect of overloading on the life of an electrical appliance,
	27	increase in rating with the use of insulating materials having higher thermal stability, Theral conductivity, Electro thermal breakdown in solid dielectrics.
	28	Chemical properties: Solubility, chemical resistance, weatherablity
8	29	Mechanical properties, mechanical structure, tensile structure
	30	Insulationg materials and their applications:
	31	Plastics- Definition and classfication
	32	Thermosetting materials
9	33	Phenol-formaldehyde resins (i.e Bakelite)
	34	amino resins (urea formaldehyde
	35	melamine-formaldehyde)
	36	Eporxy resins-their important properties and application
	37	Procedure for preparation of plastic (PVC)
	38	Thermo-plastic materials: Polyvinyl chloride (PVC), polythene, silicon, their important properties and applications

10	39	Natural insulating materials, properties and their applications- a) Mica and Mica products b) Asbestos and asbestos products c) Ceramic materials (porcelain and steatite) d) Glass and glass products
	40	Natural insulating materials, properties and their applications- e) Cotton f) Silk g) Paper (dry and impregnated) h) Rubber, Bitumen
11	41	Natural insulating materials, properties and their applications- i) Mineral and insulating oil for transformers switchgear capacitros, high voltage insulated cables, insulating vamishes for coating and impregnation oil j) Enamels for winding wires k) Glass fibre sleeves
	42	Gaseous insulating materials; Air
	43	Hydrogen, Nitrogen
	44	SF_6 their properties and applications
12	45	Introduction - Types of magnetic materials, permeability, B-H curve, magnetic saturation
	46	Hysteresis loop including coercive force and residual magnetism, concept of eddy current and hysteresis loss
	47	Curies temperature, magnetorstriction effect, method of reduction of eddy current loss and hysteresis loss
	48	Soft Magnetic Materials: a)Alloyed steels with silicon, High silicon alloy steel for transformers, low silicon alloy ateel for electric rotating machines
13	49	b) cold rolled grain oriented steels for transformer, Non-oriented steels for rotating machine
	50	c) Nickel-iron alloys, Application of the above (a-d)
	51	d) Soft Ferrites
	52	Hard magnetic materials-
14	53	Tungsten steel, chrome steel, cobalt steel
	54	b) Hard ferrites, Application of above (a-b)
	55	Special materials-Thermocouple, bimetals
	56	lead soldering and fuses materials
15	57	Application
	58	Introduction of various engineering materials necessary for fabrication of electrical machines such as motors
	59	Generators
	60	Transformers etc

LESSON PLAN

Name of Faculty : Ranbir Dahiya

Discipline : ELECTRICAL ENGG

Semester : 5th

Subject : Electrical Machine-II

Work Load : Lab-3/weak

Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	PRACTICAL
PRACTICAL DAY	
1	Determination of efficiency by (a) no load test and blocked rotor test on an induction motor (b) direct loading of an induction motor (refer BIS code)
2	Determination of efficiency by (a) no load test and blocked rotor test on an induction motor (b) direct loading of an induction motor (refer BIS code)
3	Determination of effect of rotor resistance on torque speed curve of an induction motor
4	Determination of effect of rotor resistance on torque speed curve of an induction motor
5	Observe the performance of a ceiling fan (I-ϕ) induction motor) without capacitor Determine the efeect of change in capacitor on the performance of 1-Phase induction motor and reverse the direction of motor.
6	Observe the performance of a ceiling fan (I-ϕ) induction motor) without capacitor Determine the efeect of change in capacitor on the performance of 1-Phase induction motor and reverse the direction of motor.
7	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed.
8	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed.
9	Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant.
10	Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant.
11	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test.
12	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test.
13	Determination of the effect of variation of excitation on performance of a synchronous motor
14	Determination of the effect of variation of excitation on performance of a synchronous motor
15	Revision

LESSON PLAN

Name of Faculty : Ranbir Dahiya
Discipline : ELECTRICAL ENGG
Semester : 5th
Subject : Electrical Power-I
Work Load : lecture-04
Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	Theory
Theory Day	
1	Main resources of energy, conventional and non-conventional, Different types of power stations, thermal,Power point
2	hydro, gas, diesel and nuclear power stations. Flow diagrams and brief details of their operation, comparison of the generating stations on the basis of running cost, site, starting, maintenance etc., Importance of non-conventional, sources of energy in the present scenario. Brief detail of solar energy, Bio-wind
3	Economics of Generation-Fixed and running cost, load estimation, load curves, demand factor, load factor, diversity factor, power factor and their effect on cost of generation, simple problems there on.
4	Base load and peak load power stations, inter-connection of power stations and its advantages, concept of regional and national grid.
5	Transmission Systems-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, Comparison of different systems: AC versus DC for power transmission, conductor material and sizes from standard tables
6	Transmission Systems-Constructional features of transmission lines: Types of supports, types of insulators, Types of conductors
7	Selection of insulators, conductors, earth wire and their accessories, Transposition of conductors and string efficiency of suspension type insulators, Bundle Conductors.
8	Mechanical features of line: Importance of sag, calculation of sag, effects of wind and ice related problems; Indian electricity rules pertaining to clearance
9	Electrical features of line: Calculation of resistance, inductance and capacitance without derivation in a.c. transmission line, voltage regulation, and concept of corona. Effects of corona and remedial measures,Transmission Losses
10	Distribution System-Lay out of HT and LT distribution system, constructional feature of distribution lines and their erection. LT feeders and service mains; Simple problems on AC radial distribution system, determination of size of conductor
11	Preparation of estimates of HT and LT lines (OH and Cables)., Constructional features of LT (400 V), HT (II kV) underground cables, advantages and disadvantages of underground system with respect to overhead system. Calculation of losses in distribution system
12	Faults in underground cables-determine fault location by Murray Loop Test, Varley Loop Test
13	Substations:-Brief idea about substations; out door grid sub-station 220/132 KV, 66/33 KV outdoor substations, pole mounted substations and indoor substation
14	Layout of 33/11 and kV/400V distribution substation and various auxiliaries and equipment associated with it.
15	Power Factor:- Concept of power factor Reasons and disadvantages of low power factor Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC)

LESSON PLAN

Name of Faculty : N.K.Khurana

Discipline : ELECTRICAL ENGG

Semester : 5th

Subject : Electrical Machine-II

Work Load : Lecture-04

Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	Day	Theory
1	1	Synchronous Machines- Main constructional features of S.M including commnicator and brushless excitation system
	2	Generation of 3-Q electrical machine
	3	Production of rotating magnetic field in a 3-Q winding
	4	Concept of dist. Factor and coil span factor and armative reation at unity, log and lead power factor
2	5	Operation of single symbol machine independently supplying a load-vol reg. By synchoronous imp. Method
	6	Need and necessay condition of paralled operation of alternators. Synchronising an alternator with the bus bars
	7	Operation of synch. Machine as motor-ts starting methods
	8	Effect of change in excitation of a synch. Motor
3	9	Concept and causes of hunting and its prevention
	10	Rating and cooling of synchronous machines
	11	Applications of synchronous machines
	12	Induction motors-Salient contructional features of squirrel cafe and ship ring 3-Q
4	13	Principle of operation, slip and its significance
	14	Locking of roter and stator fields
	15	Rotar resistance, inductance, emf and current
	16	Realtionship between copper loss and motor ship
5	17	Power flow diagram of and I.M
	18	Factor determining the torque
	19	Torque-ship curve, stable and unstable zones
	20	Effect of rotor resistance upon the torque ship relationship
6	21	double cage rotor motor and its application
	22	Starting of 3-Q I M, DOL, Star-delta,
	23	causes of low power factor of I.M
	24	Testing of 3-Q moto on no load and blocked rotor test ot find efficiency
7	25	Speed control of I.M
	26	Harmonics and its effects, cogging and crawling of IM
	27	FKW Motors-1-Q I.M construction, characteristics and applications
	28	Nature of field produced in 1-Q IM
8	29	Split phase IM
	30	Cap start and run motor
	31	Shaded pole motor
	32	Reluctance start motor
9	33	AC sense motor and universal motor
	34	Single phase synchronous motor
	35	Reluctance motor
	36	Hysteresus motor
10	37	Special purpose machine- Consturction and working principle of linear IM
	38	Stepper motor, servomotor, submersible motor,
	39	Introduction to energy efficient motors.
	40	

LESSON PLAN

Name of Faculty : Narsingh Parmar

Discipline : ELECTRICAL ENGG

Semester : 5th

Subject : Environmental Education

Work Load : Lecture-3

Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	Day	Theory
1	1	Definition, Scope
	2	Importance of Environmental Education
	3	Basics of ecology
2	4	Biodiversity
	5	Eco system and sustainable development
	6	Sources of pollution
3	7	Natural and manmade
	8	Causes
	9	Effects and control measures of pollution
4	10	Air
	11	Water
	12	Noise
5	13	Soil
	14	Radioactive
	15	Nuclear
6	16	Their units of measurement
	17	Solid waste management
	18	Causes
7	19	Effects
	20	Control measures of uban
	21	Industrial waste
8	22	Mining and deforestration
	23	Causes
	24	Effects
9	25	Control measures
	26	Environmental legislation
	27	Water(prevention and control of pollution) act 1974
10	28	Air (Prevention and control of pollution) act 1981
	29	Environmental protection act 1986
	30	Role
11	31	Function of state pllution control board
	32	Role of non-conventional energy resources (solar energy)
	33	Wind energy
12	34	Bio Energy
	35	Hydro Energy
	36	Current issue in environmental pollution-Global warming
13	37	Green House effect
	38	Depletion of Ozone layer, Recycling of material
	39	Environmental ethics, rain
14	40	Water harvesting
	41	Maintainance of groundwater
	42	Acid rain, carbon credits

LESSON PLAN

Name of Faculty : N.k.Khurana
Discipline : ELECTRICAL ENGG
Semester : 5th
Subject : IECD
Work Load : L-4
Lesson Plan Duration- 15 weeks (July 2018 to Nov. 2018)

Week	Theory
1	Introduction of SCR-Construction and working principla of an SCR, two transistor analogy and characteristics of SCR, SCR specification and rating Construction, working principle and V.I characteristics of DIAL, TRIAL and quadinac
2	Basic idea about the selectors of heat sinc for SCR and TRIACs Method of triggering a thyristor, study of triggering circuit UJT, its consturctions, working principles and V-I characteristics UJT relaxation oscillator
3	Commutators of thyristor Series and paralled operation of thyristor Applications of SCR, TRIAC and quadinac such as light intensity control, spreed control of DC and universal motor, fan regulator, battery charger etc.
4	dv/dt and di/dt protection of SCR **Controlled rectifier-** single phase half wave controlled rectifiers with resistive and conductive load, concept of free wheeling diode. Single phase helf controlled full wave rectifiers
5	Single phase fully controlled full wave rectifier bridge, Single phase full wave centre tapped rectifier Three phase fullwave half controlled bridge rectifier Three phase fullwave full controlled bridge rectifier
6	**Inverters, choppers, dual converters and cycle converters-** Inverter, introduction, working principles, voltage and current driver series and parallel inverters and applications
7	Choppers-introduction, types of choppers, their working principles and applications
8	Dual vonverters-Introduction , working principles and applications
9	Cycle-converters-Introduction, types working principle and applications
10	**Thyrister control of electric drives- DC drives control-** Half wave drives Full wave drives Chopper drives
11	Ac drives control Phase control Variable frequency ac drives Constant V/f applications
12	Voltage control inverters drives Cycle converter controlled AC drives Ship control AC drives Uninterrupted power supplies
13	UPS, stablizers, SMPS
	UPS online, offline
	Storage devices and their maintenance