Name of Faculty	Mr. Kulwant Kharab
Discipline	Electrical Engineering

Semester	6th
Subject	Electrical Energy Conservation and Management
Lesson Plan Duration	14 week(From March2023 to June 2023) Theory: 05
Week **Theory**	

	Lecture Day	**Topic (Including Assignment/ Test)**
1st	Day1	**1 Lighting System**
	Day2	1.1. Basic definitions- Lux, lumen and illumination space to height ratio
	Day3	1.2Types of different lamps and their features
	Day4	1.3 Energy efficient practices in lighting
	Day5	1.4.Tips for energy saving in building - New Building, Existing Building
2nd	Day1	1.5Laws of Illumination
	Day2	1.6 Calculation of illumination at different points, Main requirements for proper lighting
	Day3	1.7Macro level approach at design stage
	Day4	Revision/ Assignment
	Day5	**2 Energy Conservation and EC Act 2001**
3rd	Day1	Introduction to energy management, energy conservation, energy efficiency and its need
	Day2	Salient features of Energy Conservation Act 2001 &
	Day3	The Energy Conservation (Amendment) Act, 2010 and its importance
	Day4	Standards and Labeling - Concept of star rating and its importance, Types of product available for star rating
	Day5	Revision/ Assignment
4th	Day1	Class Test
	Day2	**3 Energy Audit**
	Day3	Types and methodology
	Day4	Energy auditing reporting format
	Day5	Energy audit instruments
5th	Day1	Revision/ Assignment
	Day2	4 **Electrical Supply System and Motors**
	Day3	Types of electrical supply system
	Day4	Single line diagram
	Day5	Transformer loading
6th	Day1	Tips for energy savings in transformers
	Day2	Motor Loading
	Day3	Variation in efficiency and power factor with loading
	Day4	Tips for energy savings in motors
	Day5	Need for energy efficient motors
7th	Day1	Initial cost versus like cycle cost
	Day2	Cost analysis on life cycle basis
	Day3	Various constructional features of EEMs

	Day4	EEM as compared to standard motors
	Day5	Revision/ Assignment
8th	Day1	**5 Energy Efficiency in Electrical Utilities**
	Day2	Understanding Electricity Bill , Tariff structure
	Day3	Components of power (kW, kVA and kVAR) and power factor
	Day4	Concept of sanctioned load, maximum demand, contract demand and monthly minimum charges (MMC)
	Day5	**5.2 Pumps;** Introduction to pump and its application, Efficient pumping system operation,
	Day1	Energy efficiency in agriculture pumps, Tips for energy saving in pumps,
	Day2	**5.3 Compressed Air System** Types of air compressor and its applications,
	Day3	Leakage test, Energy saving opportunities in compressors

9th	Day4	**5.4 Energy Conservation in HVAC and Refrigeration System;** Introduction
	Day5	Concept of Energy Efficiency Ratio (EER)
10th	Day1	Energy saving opportunities in Heating, Ventilation and
	Day2	Air-conditioning (HVAC) and Refrigeration Systems
	Day3	**5.5 Thermal Basics**: Types of fuels, Thermal energy
	Day4	Energy contents in fuel, Energy Units and
	Day5	its conversion in terms of metric ton of oil equivalent (MTOE)
11th	Day1	Revision/ Assignment
	Day2	Class Test
	Day3	**6 General Energy Saving Tips;** Lighting System, Room Air Conditioners
	Day4	Refrigerators, Water Heater, Computers,
	Day5	Fans, Heaters
12th	Day1	Blowers and Washing Machines
	Day2	Water Pumps
	Day3	Kitchens, Transport
	Day4	Revision/ Assignment
	Day5	**Class Test**
13th	Day1	**7 Energy Conservation Building Code**
	Day2	Haryana ECBC and its salient features including thermal behavior of buildings
	Day3	ECBC Guidelines on Building Envelope
	Day4	ECBC Prescriptive Requirements for Building Envelope
	Day5	ECBC Guidelines on Heating, Ventilation and Air Conditioning
14th	Day1	ECBC Guidelines on Service Hot Water and Pumping
	Day2	ECBC Guidelines on Lighting
	Day3	ECBC Guidelines on Electrical Power
	Day4	ECBC Guidelines on Star Labelling and Minimum Star rating
	Day5	Revision/ Assignment
15th	Day1	**Class Test**
	Day2	Revision/Review/Test of old HSBTE Papers
	Day3	Revision/Review/Test of old HSBTE Papers

	Day4	Revision/Review/Test of old HSBTE Papers
	Day5	Revision/Review/Test of old HSBTE Papers

Lesson plan	
Name of Faculty	Sh. Nar Singh
Discipline	Electrical Engineering
Semester	6th
Subject	EDM
Lesson Plan Duration	14 week (From March 2023 to June 2023)Theory : 03

Week	**Theory**

	Lecture Day	**Topic (Including Assignment and Test)**
1st	Day 1	**SECTION – AENTREPRENEURSHIP** Concept /Meaning and its need
	Day2	Qualities and functions of entrepreneur and barriers in entrepreneurship
	Day 3	Sole proprietorship and partnership forms of business organisations
2nd	Day 1	Schemes of assistance by entrepreneurial support agencies at National, State, District level: NSIC, NRDC,DC:MSME SIDBI,
	Day2	NABARD, Commercial Banks SIDBI, NABARD, Commercial Banks
	Day 3	Technology Business Incubator (TBI) and Science and Technology, Entrepreneur Parks (STEP).
3rd	Day 1	Assignment/Problem Solution
	Day2	**Unit:2 Market Survey and Opportunity Identification**
	Day 3	Scanning of business environment
4th	Day 1	Salient features of National and State industrial policies and resultant business opportunities
	Day2	Types and conduct of market survey, Assessment of demand and supply in potential areas of growth, Identifying business opportunity
	Day 3	Considerations in product selection
5th	Day 1	Assignment/Problem Solution
	Day2	**3:Project report Preparation**
	Day 3	Preliminary project report
6th	Day 1	Detailed project report including technical,
	Day2	economic and market feasibility
	Day 3	Common errors in project report preparations
7th	Day 1	Exercises on preparation of project report
	Day2	Assignment/Problem Solution
	Day 3	**SECTION –B 4 MANAGEMENT** Definitions and importance of management
8th	Day 1	Functions of management: Importance and Process of planning, organizing, Staffing, directing and controlling Principles of management (Henri Fayol, F.W. Taylor)

	Day2	Concept and structure of an organization, Types of industrial organizations Line organization b) Line and staff organization c) Functional Organization
	Day 3	**5:Leadership and Motivation** introduction Leadership, Definition and Need
9th	Day 1	Qualities and functions of a leader Manager Vs leader, Types of leadership
	Day2	Motivation: Definitions and characteristics, Factors affecting motivation,
	Day 3	Theories of motivation (Maslow, Herzberg, McGregor)
10th	Day 1	**6: Management Scope in Different Areas**, Human Resource Management
	Day2	Introduction and objective, Introduction to Man power planning
	Day 3	recruitment and selection Introduction to performance appraisal methods
11th	Day 1	Material and Store Management Introduction functions, and objectives
	Day2	ABC Analysis and EOQ, Marketing and sales, Introduction, importance, and its functions Physical distribution, Introduction to promotion mix

	Day 3	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT,GST
12h	Day 1	**7:Work Culture;** Introduction and importance of Healthy Work Culture in organization
	Day2	Components of Culture, Importance of attitude, values and behavior,
	Day 3	Behavioural Science – Individual and group behavior.
13th	Day 1	Professional ethics – Concept and need of Professional Ethics and human values.
	Day2	**8: Basic of Accounting and Finance**, Meaning and definition of accounting, Double entry system of book keeping,
	Day 3	Trading account, LA account and balance sheet of a company
14th	Day 1	Objectives of Financial Management, Profit Maximization v/s Wealth Maximization
	Day2	**9:Miscellaneous Topics** Customer Relation Management (CRM) Definition and need, Types of CRM
	Day 3	Total Quality Management (TQM),
15th	Day 1	Statistical process control Total employees Involvement Just in time (JIT)
	Day2	Intellectual Property Right (IPR),Introductions
	Day 3	Definition and its importance Infringement related to patents, copy right, trade mark

Lesson plan

Name of Faculty	Sh Ravinder Kumar
Discipline	Electrical Engineering
Semester	6th
Subject	Industrial electronics and control of drives
Lesson Plan Duration	From March2023 to June2023
Work load [Theory + Practical] Per Week	[04+02]

Week	Day	Theory Topic/ Assignment/ Test	No.	Practical
1st	1	**Unit-I Introduction to SCR**	1	To draw V-I characteristics of an SCR
	2	Construction and working principles of an SCR		
	3	Characteristics of SCR, Two transistor analogy		
	4	SCR specifications and rating, Construction, working principles and V-I characteristics of DIAC		
2nd	1	and TRIAC and Quadriac	2	To draw V-I characteristics of a TRIAC
	2	Basic idea about the selection of heat sinks for SCR and TRIACS		
	3	Methods of triggering a Thyristor, Study of triggering circuits		
	4	UJT, its Construction, working principles and V-I characteristics		
3rd	1	UJT as relaxation oscillator	3	To draw V-I characteristics of a DIAC
	2	Commutation of Thyristors		
	3	Series and parallel operation of Thyristors		
	4	Applications of SCR, TRIACS and Quadriac		
4th	1	dv/dt and di/dt protection of SCR	4	Revision/File checking
	2	Assignment/Class test of 1st unit		
	3	**Unit2: Introduction to Controlled Rectifiers**		
	4	Single phase half wave controlled rectifier with resistive load		
5th	1	With Inductive load and freewheeling diode	5	To draw uni-junction transistor characteristics
	2	Single phase half controlled full wave rectifier		
	3	Single phase fully controlled full wave rectifier bridge		
	4	Single phase full wave Centre tapped rectifier		
6th	1	Three phase full wave half controlled bridge rectifier	6	Observe the output wave of an UJT relaxation oscillator
	2	Three phase full wave fully controlled bridge rectifier		
	3	Assignment/Class test of 1st unit		
	4	Revision/checking/Problems solutions		
7th	1	**Unit3: Introduction to Inverters, Choppers, Dual Converters and Cyclo Converters**	7	Mid- term viva-voice/file checking
	2	Working principles and application of VSI		

	3	Working principles and application of CSI		
	4	Choppers-introduction, types of choppers and their working principles and applications		
8th	1	Class A,B and C	8	Observe the wave shape across SCR and load of an illumination control circuit
	2	Class D and E		
	3	Dual converters-introduction, working principles and applications		
	4	Cyclo-converters- introduction		
9th	1	types, working principles and applications	9	Fan speed regulator using TRIAC Quadriac (fabrication of this circuit)
	2	Assignment/Class test of 1st unit		
	3	Revision/checking/Problems solutions		
	4	**Unit4:Thyristor Control of Electric Drives**		
	1	DC drives control	10	Speed-control of a DC shunt motor or universal motor
	2	Half wave drives		
	3	Full wave drives		
10th	4	Chopper drives		
	1	AC drives control		
	2	Phase control		
	3	Variable frequency a.c. drives		
11th	4	Constant V/F application	11	Revision/File checking
	1	Voltage controlled inverter drives		
	2	Constant current inverter drives	12	Revision/File checking
12th	3	Cycloconvertors controlled AC drives		
	4	Slip control AC drives		
	1	Assignment / Class test	13	Single phase controlled rectifier
	2	Problem solution/ test check		
	3	**Unit5: Uninterrupted Power Supplies**		
13th	4	UPS, UPS online, off line		
14th	1	Stabilizers, SMPS	14	Use of Variable Frequency Drive for running a 3 phase Induction motor
	2	Storage devices (batteries) and their maintenance		
	3	Revision of important topics		
	4	Revision of important topics		
	1	Assignment / Class test	15	Revision/File checking/ Internal Practical
	2	Problem solution/ test check		
	3	Revision/Review/Test of old HSBTE Papers		
15th	4	Revision/Review/Test of old HSBTE Papers		

Lesson Plan

Name of Faculty	Mr Prnkit Gupta
Discipline	Electrical Engineering
Semester	6th
Subject	Electrical Power-II
Lesson Plan Duration	14 week(From March2023 to June 2023) Theory : 04,Practical: 02

Week	Theory Day	Practical Day	Lecture Topic (including Assignment/ Test)	Practical	Topic
1st	Day 1		**Unit1: Faults; Introduction**	Day1	Testing of the dielectric strength of transformer oil and air
	Day2		Common type of faults in both overhead and underground systems		
	Day 3		symmetrical/ Unsymmetrical faults		
	Day 4		Single line to ground fault		
	Day 1		double line to ground fault, 3-phase to Ground	Day1	Study of different types of circuit breakers and isolators
			fault open circuit		
	Day2		Simple problems relating to fault finding.		
2nd	Day 3		Revision of important topics		
	Day 4		Assignment / Class test		
	Day 1		**2 Switch Gears:** Purpose of protective gear.	Day1	Revision/ file checking
			Difference between switch, isolator and circuit breakers		
3rd		Day2	Function of isolator and circuit breaker. Making capacity and breaking		
	Day 3		capacity of circuit breaker (only definition)		
	Day 4		2.2 Circuit breakers. Types of circuit breakers, bulk and minimum oil circuit breakers,		
	Day 1		air SF6 circuit breakers	Day1	Plot the time current
4th		Day2	2.3 Principles of Arc extinction blast circuit breakers in OCB and ACB, Constructional relay		characteristics of over current
	Day 3		features of OCB, ACB, and their working		
	Day 4		Method of arc extinction		
	Day 1		2.4 Miniature circuit breakers MCB, MCCB	Day1	Power measurement by using
5th	Day2		ELCB, for distribution and transmission system (Descriptive)		CTs and PTs
	Day 3		Revision of important topics		
	Day 4		Assignment / Class test		
	Day 1		**3 Protection devices**: Fuses; function of fuse.	Day1	Revision/ file checking Day2
			Types of fuses HV and LV fuses,		
6th	Day 3		rewire-able, cartridge, HRC		
	Day 4		**3.2 Earthing**: purpose of earthing, method of earthing		
	Day 1		Equipment earthing, Substation earthing,	Day1	Earthing of different equipment/Main Distribution Board and Energy Meter Box
	Day2		System earthing as per Indian Electricity rules.		
7th			Methods of reducing earth resistance.		

8th	Day 3 Day 4 Day 1 Day2 Day 3	**3.3 Relays**: a) Introduction - types of relays Electromagnetic and thermal relays, their construction and working b) Induction type over-current, earth fault relays instantaneous over current	Day1	Perform the overload and short circuit test of MCB as per IS specifications
	Day 4	Directional over-current, differential relays, their functions	Day1	
9th	Day 1	d) Distance relays, their functions	Day1	Revision/ file checking
	Day2	e) Idea of static relays and their applications		
	Day 3	Revision of important topics		
	Day 4	Assignment / Class test		
10th	Day 1	**4 Protection Scheme :** introduction	Day1	Plot the time-current characteristics of Kit-Kat fuse wire
	Day2	Relays for generator protection		
	Day 3	4.2 Relays for transformer protection including Buchholtz relay protection		
	Day 4	4.3 Protection of feeders and bus bars		
11th	Day 1	Over current and earth fault protection.	Day1	Taking reading of current on any LT line with clip on meter
	Day2	4.4 Distance protection for transmission system		
	Day 3	4.5 Relays for motor protection		
	Day 4	Relays for generator protection		
12th	Day 1	Revision of important topics	Day1	Revision/ file checking
	Day2	Assignment / Class test		
	Day 3	**5 Over-voltage Protection :** Protection of system against over voltages		
	Day 4	causes of over voltages, utility of ground wire		
13th	Day 1	5.2 Lightning arrestors, rod gap	Day1	Revision/ file checking
	Day2	Horn gap, metal oxide type.		
	Day 3	5.3 Transmission Line protection against overvoltages and lightning		
	Day 4	substation protection against over-voltages and lightning		
14th	Day 1	Revision of important topics	Day1	Quiz /viva-voice related to electrical machine
	Day2	Assignment / Class test		
	Day 3	**6:Concept of Tariffs**		
	Day 4	6.2 Block rate, flat rate		
15th	Day 1	maximum demand and two part tariffs	Day1	Quiz /viva-voice related to electrical machine
	Day2	6.3 Simple problems		
	Day 3	Assignment / Class test		
	Day 4	Problem solution/ test check		