Govt. Polytechnic Panchkula

Electrical Engineering Department

Lesson plan

Discipline	**Electrical Engineering**
Semester	**5th (odd- semester)**
Subject	**Electrical Power- I**
Lesson Plan Duration	**From September 2023**
Work load (Theory + Practical) Per Week	**(04+00)**

Week	Day	Topics
1st	1	Unit1:introduction to Power Generation
	2	Main resources of energy, conventional and non-conventional
	3	Different types of power stations, thermal power plant
	4	Hydro Power plant Flow diagrams and operation
2nd	1	Gas power plant Flow diagrams and operation
	2	diesel power station Flow diagrams and operation
	3	nuclear power Plant Flow diagrams and operation
	4	comparison of the generating stations on the basis of running cost, site, starting, maintenance
	1	Assignment

3rd	2	Unit2: Introduction to Economics of Generation
	3	Fixed and running cost, load estimation, load curves
	4	Demand factor, load factor, diversity factor
4th	1	Power factor and their effect on cost of generation
	2	Simple problems based on above relations
	3	Revision/Assignment/ Class Test
	4	Base load and peak load power stations
5th	1	inter-connection of power stations and its advantages
	2	Concept of regional and national grid
	3	Revision
	4	Class Test
6th	1	Unit3: Introduction to Transmission Systems
	2	Layout of transmission system, selection of voltage for H.T and L.T lines
	3	advantages of high voltage for Transmission of power in both AC and
	4	Comparison of different systems: AC versus DC for power transmission,
7th	1	material and sizes from standard tables
	2	Constructional features of transmission lines
	3	Types of supports
	4	Types of insulators
8th	1	Types of conductors, Selection of insulators
	2	conductors, earth wire and their accessories
	3	Transposition of conductors and string efficiency of suspension type insulators, Bundle Conductors
	4	Mechanical features of line
9th	1	Importance of sag, calculation of sag,
	2	effects of wind and ice related problems
	3	Indian electricity rules pertaining to clearance
	4	Electrical features of line: Calculation of resistance, inductance and capacitance
10th	1	A.C. transmission line, voltage regulation, and concept of corona. Effects of corona and remedial measures
	2	Transmission Losses
	3	Revision/Assignment/ Class Test
	4	Revision/Assignment/ Class Test
11th	1	Unit 4: Distribution System Lay out of HT and LT distribution system
	2	constructional feature of distribution lines and their erection
	3	LT feeders and service mains
	4	Simple problems on AC radial distribution system
12th	1	Determination of size of conductor
	2	Preparation of estimates of HT and LT lines
	3	Constructional features of LT (400 V), HT (II kV) underground cables
	4	Advantages and disadvantages of underground system with respect to overhead system.
13th	1	Calculation of losses in distribution system
	2	Faults in underground cables-determine fault location by

	3	Murray Loop Test, Varley Loop Test
	4	Revision/Assignment/ Class Test
14th	1	Revision/Problem solution/ Class Test
	2	Unit 5: Substations: Brief idea about substations
	3	Outdoor grid sub-station 220/132 KV, 66/33 KV outdoor substations
	4	Pole mounted substations and indoor substation
15th	1	Layout of 33/11 distribution substation and various auxiliaries
	2	Layout of kV/400V distribution substation and various auxiliaries
	3	Revision/Assignment/ Class Test
	4	Unit 6: power factor, reasons and disadvantages of low power factor
16th	1	Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC)
	2	Revision and problem solution
	3	Revision/Review/Test of old HSBTE Papers
	4	Revision/Review/Test of old HSBTE Papers