

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA-4
DEPARTMENT OF ELECTRICAL ENGINEERING

Lesson Plan By- Debasish Choudhury

Session: 2022-23

GENERATION, TRANSMISSION & DISTRIBUTION (TH-04)

LIST OF WEEK/ MONTH WISE AVAILABLE DAYS/ PERIODS

Sl. No.	Month	Week-wise no. of academic days available					Total no. of academic days
		Week- 1	Week- 2	Week- 3	Week- 4	Week- 5	
1	March	--	--	4	6	3	13
2	April	2	5	4	4	6	21
3	May	5	4	4	5	2	20
4	June	3	6	--	--	--	09
Total		10	15	12	15	11	63

NO. OF AVAILABLE CLASSES PER WEEK/ MONTH

Sl. No.	Month	Week-wise no. of academic periods available					Total no. of academic periods
		Week- 1	Week- 2	Week- 3	Week- 4	Week- 5	
1	March	--	--	4	6	3	13
2	April	2	5	4	4	6	21
3	May	5	4	4	5	2	20
4	June	3	6	--	--	--	09
Total		10	15	12	15	11	63

CHAPTER-WISE DISTRIBUTION OF PERIODS

Sl. No.	Name of the Chapter	Periods as per Syllabus	Required period	Expected Marks
01	Generation of electricity	07	08	08
02	Overhead lines	07	06	14
03	Transmission of electric power	05	04	06
04	Performance of short and medium lines	07	07	14
05	EHV Transmission line	07	03	12
06	Distribution systems	07	10	10
07	Underground Cables	06	07	06
08	Economic Aspects	06	05	10
09	Types of Tariff	03	04	06
10	Substations	05	04	14
	TOTAL	60	58	100

LESSON PLAN

Name of the Month	Week No.	Class day	Art. No.	Theory Topics
M A R C H	3 rd	1 st	1.1	<u>CHAPTER NO- 1(GENERATION OF ELECTRICITY)</u> Introduction, Elementary idea on generation of electricity from Thermal power plant
		2 nd		Continue
		3 rd		Hydroelectric power station
		4 th		Continue....
	4 th	1 st		Nuclear power station
		2 nd		Continue...
		3 rd	1.2	Introduction to solar power plant. (Photo voltaic cell).
		4 th	1.3	Draw Layout diagram of generating stations.
		5 th	3.1	<u>CHAPTER NO-03 (OVER HEAD LINES)</u> State types of supports, size and spacing of conductor.
		6 th	3.2	Types of conductor materials.
	5 th	1 st	3.3	State types of insulator and cross arms.
		2 nd	3.4	Derive for sag in overhead line with support at same level
		3 rd		Derive for sag in overhead line with support at different level
A P R I L	1 st	1 st	3.5	Simple problem on sag
		2 nd	2.1	<u>CHAPTER NO -02 (TRANSMISSION OF ELECTRIC POWER)</u> Draw layout of transmission and distribution scheme
	2 nd	1 st	2.2	Explain voltage Regulation & efficiency of transmission.
		2 nd	2.3	Kelvin's law for economical size of the conductor
		3 rd	2.4	Corona and corona loss on transmission lines.
		4 th	4.1	<u>CHAPTER NO -04 (PERFORMANCE OF SHORT & MEDIUM LINES)</u> Calculation of regulation and efficiency
		5 th		Numerical problem.....
	3 rd	1 st		Numerical problem.....
		2 nd		Numerical problem.....
		3 rd		Numerical problem.....
		4 th		Numerical problem.....
	4 th	1 st		Numerical problem.....

M A Y		2 nd	5.1 5.1.1	<u>CHAPTER NO -05 (EHV TRANSMISSION)</u> Explain EHV AC transmission. Explain Reasons for adoption of EHV AC transmission
		3 rd	5.1.2	Problems involved in EHV AC transmission.
		4 th	5.2 5.2.1	HV DC transmission. Advantages and Limitations of HV DC transmission
	5 th	1 st	6.1	<u>CHAPTER-06 (DISTRIBUTION SYSTEMS)</u> Introduction of Distribution System.
		2 nd	6.2	Connection Schemes of Distribution System (Radial)
		3 rd	6.2	Introduction of Distribution System. Connection Schemes of Distribution System (Ring main & Inter connected)
		4 th	6.3	Explain DC distributions Distributor fed at one End Distributor fed at both the ends
		5 th		Numerical problem
		6 th		Numerical problem
	1 st	1 st		6.3.3 Ring distributors
		2 nd		Numerical problem
		3 rd	6.4 6.4.1	AC distribution system. Method of solving AC distribution problem
		4 th	6.4.2	Three phase four wire star connected system arrangement
		5 th	7.1	<u>CHAPTER NO-07 (UNDER GROUND CABLES)</u> Explain cable insulation and classification of cables.
	2 nd	1 st	7.2	Types of L. T. cables with construction features
		2 nd	7.2	Types of H.T. cables with construction features
		3 rd	7.3	Methods of cable laying.
		4 th	7.4	Localization of cable faults – Murray loop test for short circuit fault/Earth fault.
	3 rd	1 st		Localization of cable faults Varley loop test for short circuit fault/Earth fault.
		2 nd		Simple problems
		3 rd	8.1	<u>CHAPTER-08 (ECONOMIC ASPECTS)</u> Causes of low power factor.
		4 th	8.1	Methods of Improvement of power factor in power system.
	4 th	1 st		Cont....
		2 nd	8.2	Factors affecting the economics of generation

			8.2.1 8.2.2 8.2.3 8.2.4	Define & explain Load curves. Define & explain Demand factor Define & explain Maximum demand. Define & explain Load factor.
		3 rd	8.2.5 8.2.6 8.3	Define & explain Diversity factor. Define & explain Plant capacity factor. Define & explain peak load and Base load on power station.
		4 th	9.1	<u>CHAPTER NO-09 (TYPES OF TARIFF)</u> Desirable characteristics of a tariff
		5 th	9.2	Explain flat rate, block rate, two part and
	5 th	1 st		maximum demand tariffs
		2 nd		Simple problems
J U N E	1 st	1 st	10.1	<u>CHAPTER NO -10 (SUBSTATION)</u> Layout of LT. HT Substation.
		2 nd		Layout of EHT substation.
		3 rd	10.2	Earthing of Substation, transmission, distribution lines
	2 nd	1 st		Earthing of distribution lines
		2 nd		Chapter-1,2,3 Revision
		3 rd		Chapter-4,5,6 Revision
		4 th		Chapter-7,8 Revision
		5 th		Chapter-9,10 Revision
		6 th		Previous year question & answer discussion

Coverage of Chapters up to the internal assessment (2nd week of May 2022): 1, 2 , 3 ,4 & 5

Learning Resources:

Sl.No	Title of the Book	Name of Author	Publisher
1.	Principle of Electrical power	V. K. Mehta	S.Chand
2.	Power System Engineering	D. P. Kothari ,IJ Nagrath	TMH
3	A Text Book of Power system Engg	S. L. Uppal	Khanna Publisher
4	A course of electrical Power	Sony, Gupta, Bhat Nagar	Dhanpat Rai & Co

