

Code: 20EE3503

**III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2023**

**ELECTRICAL POWER GENERATION, TRANSMISSION
AND DISTRIBUTION
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Draw a neat schematic diagram of a Hydro Electric Plant and explain the functions of various components?	L3	CO2	7 M
	b)	With neat sketch explain the function of pumped storage plants.	L3	CO2	7 M
OR					
2	a)	Draw the line diagram of a thermal power station showing various parts.	L3	CO2	7 M
	b)	Compare conventional and non-conventional sources.	L3	CO2	7 M
UNIT-II					
3	a)	Derive the expression for the inductance of single phase transmission line.	L3	CO3	7 M

	b)	Calculate the GMR of a conductor having seven strands each of 3mm radius.	L3	CO3	7 M
OR					
4	a)	Explain (i)Skin effect,(ii) Proximity effect	L3	CO3	7 M
	b)	Derive the expression for the inductance of a 3-phase line which is completely transposed.	L3	CO3	7 M
UNIT-III					
5		Discuss in detail the nominal-T representation with neat circuit diagram and Phasor diagram.	L3	CO3	14 M
OR					
6	a)	Write short note on Ferranti effect.	L3	CO3	7 M
	b)	Derive the expression for sag when the supports are at equal heights.	L3	CO3	7 M
UNIT-IV					
7	a)	Define String Efficiency? Discuss the different methods of improving string efficiency?	L3	CO3	7 M
	b)	Explain the factors that affect the corona loss on an overhead transmission line.	L3	CO5	7 M
OR					
8	a)	What are the different types of grading of cables? Explain each.	L3	CO5	7 M
	b)	Derive the expression for Insulation resistance of a cable.	L3	CO5	7 M
UNIT-V					
9	a)	Compare DC distribution and AC distribution systems.	L4	CO4	7 M

	b)	Explain the method of solving A.C distribution system when power factor referred to the receiving end voltage with a Phasor diagram.	L4	CO4	7 M
OR					
10	a)	A 2-wire d.c distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A and 50A situated at 500m, 1000m, 1600m and 2000m from the feeding point A. Each conductor has a resistance of 0.01 ohm per 1000 m. Calculate the p.d at each load point if a p.d of 300V is maintained at point A.	L4	CO4	7 M
	b)	Derive the expression for total voltage drop in a uniformly loaded DC distributor fed at one end.	L4	CO4	7 M