

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 80007**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025

Fifth Semester

Electrical and Electronics Engineering

U23EE513– TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State proximity effect.	2	K1	CO1
2.	Mention any two purposes of the transposition of transmission line conductors.	2	K2	CO1
3.	Write the expressions for the ABCD constant of a short transmission line.	2	K1	CO2
4.	Define visual critical disruptive voltage.	2	K1	CO2
5.	Write the functions of insulators in overhead transmission lines.	2	K2	CO3
6.	Define the puncture voltage of an overhead line insulator.	2	K1	CO3
7.	Define sag of an overhead transmission line.	2	K1	CO4
8.	List the advantages of prestressed concrete poles over RCC poles.	2	K2	CO4
9.	State two benefits of improving the power factor of a distribution system.	2	K1	CO5
10.	List the commonly used voltage levels in India for primary and secondary distribution of electrical energy.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Describe the structure of the electric power system with a neat layout.	13	K2	CO1
	(OR)			
b)	Describe the effects of Earth on the capacitance of the transmission line.	13	K2	CO1
12. a)	Derive the ABCD constants of the medium transmission line using the Nominal T method.	13	K3	CO2
	(OR)			
b)	Derive the expression for the real and reactive power flow through the transmission line.	13	K3	CO2
13. a)	Explain the pin and post-type insulators.	13	K2	CO3
	(OR)			
b)	Explain the construction of underground cables.	13	K2	CO3
14. a)	Illustrate the methods of improving the string efficiency with an example.	13	K3	CO4
	(OR)			
b)	Illustrate impulse voltage flashover and puncture voltage test for an insulator.	13	K3	CO4
15. a)	Compare the ring main and radial distribution networks with a neat sketch.	13	K4	CO5
	(OR)			
b)	Compare the air and gas-insulated substations in detail.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	A 50 Hz, three-phase transmission line of 30 km length has a total series impedance of $(40+j125) \Omega$ and shunt admittance of $10^{-3}$ mho. The load is 50 MW at 220 kV with 0.8 PF lag. Find the sending end voltage, current, power factor, and efficiency using the nominal- $\pi$ method.	15	K2	CO1
	(OR)			
b)	A string of suspension insulators consists of four insulating discs. The capacitance between each pin and earth is 0.1 times the self-capacitance of the insulating disc. The voltage between the line conductor and earth is 132 kV. Find i. the voltage distribution across each insulating disc ii. the string efficiency.	15	K4	CO4