

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

*Fourth Semester**Electrical and Electronics Engineering*

EE3401 - TRANSMISSION AND DISTRIBUTION

*Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Why the transmission lines are transposed?	L1	1	2
2.	Compare between bundled conductors and stranded conductors.	L2	1	2
3.	Classify the types of transmission lines.	L2	2	2
4.	What is Ferranti effect?	L1	2	2
5.	Outline the methods of improving string efficiency in line insulators.	L2	3	2
6.	Name the various methods of grounding.	L1	3	2
7.	What do you mean by insulation resistance?	L1	4	2
8.	Outline the importance of potential gradient.	L2	4	2
9.	Compare between concentrated and distributed loading.	L2	5	2
10.	Mention the various types of substations.	L1	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a A single phase transmission line has two parallel conductors 3m apart, the radius of each conductor being 1 cm. Identify the loop inductance per km length of the line if the material of the conductor is (i) copper (ii) steel with relative permeability of 100.	L3	1	16
	Or			
	b Develop an expression for capacitance of three phase transmission line with unsymmetrical spacing in a transposed conductors.	L3	1	16
12.	a A 3 phase, 50 Hz, 150km line has a resistance, inductive reactance and capacitive shunt admittance of 0.1Ω , 0.5Ω and $3 \times 10^{-6} S$ per km per phase. If the line delivers 50 MW at 110kV and 0.8 pf lagging, solve for the sending end voltage and current. Assume a nominal π circuit for the line.	L3	2	16
	Or			
	b Model the End condenser method of a medium length transmission line and derive expressions for sending end voltage and current. Also draw the respective phasor diagram.	L3	2	16

13.	a	The towers of height 30m and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500m. If the tension in the conductor is 1600 kg, Identify the minimum clearance of the conductor and water and clearance mid way between the supports. Weight of conductor is 1.5 kg/m. Bases of the towers can be considered to be at water level.	L3	3	16
		Or			
	b	In a 33kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11 % of self capacitance of each insulator, solve for (i) the distribution of voltage over 3 insulators and (ii) string efficiency.	L3	3	16
14.	a	Discuss the classification cables.	L2	4	16
		Or			
	b	The capacitance of a three-phase belted cable are $12.6\mu\text{F}$ between the three cores bunched together and the lead sheath and $7.4\mu\text{F}$ between the one core and the other two connected to sheath. Examine the charging current drawn by the cable when connected to 66 kV, 50 Hz supply.	L4	4	16
15.	a	A 2 wire dc street mains AB, 600 m long is fed from both ends at 220V. Loads of 20 A, 40A, 50A and 30 A are tapped at distances of 100m, 250m, 400m and 500m from the end A respectively. If the area of X section of distribution conductor is 1 cm^2 , show the minimum consumer voltage. Take $\rho=1.7 \times 10^{-6}\ \Omega\text{ cm}$.	L2	5	16
		Or			
	b	Explain the latest trends in transmission and distribution like EHVAC, HVDC and FACTS.	L2	5	16