PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025   **Time:** 1.00pm to 04.00pm

School: SOE	**Program:** B. Tech (EEE)
Course Code : EEE2021	**Course Name :** Transmission and Distribution
Semester: MK	**Max Marks**: 100 **Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	12	22	22	22	22

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

	Answer ALL the Questions. Each question carries 2marks. 10Q x2M=20M			
1	List the benefits of using higher voltage for power transmission.	2 Marks	L1	CO1
2	List any two differences between the AC and DC Transmission system.	2 Marks	L1	CO1
3	List the main components of the transmission system and explain their functions	2 Marks	L1	CO1
4	Summarize the reason why the transmission lines are three phase 3 wire circuits while distribution lines are three phase 4 wire circuits	2 Marks	L2	CO1
5	Summarize the various types of AC transmission systems utilized in power networks.	2 Marks	L2	CO1
6	Summarize the key differences between primary distribution and secondary distribution systems?	2 Marks	L2	CO1
7	Identify the basic types of transmission line configurations used for calculating line inductance.	2 Marks	L2	CO2
8	Mention the typical range of distances and the voltage range that define a short transmission line.	2 Marks	L2	CO3
9	Define string efficiency in overhead transmission systems, and how can string efficiency be improved to ensure uniform voltage distribution across all insulators	2 Marks	L2	CO4
10	Draw the single line diagram of a ring main system for A.C. distribution.	2 Marks	L2	CO5

Part B

11.	a.	Identify and list important factors to be considered while deciding the transmission systems.	**10 Marks**	L2	CO2
	b.	Calculate the loop inductance per km of a single transmission line comprising of two parallel conductors one meter apart and 1.25 cm in diameter. Also compute the reactance of the transmission line if frequency is 50 Hz.	**10 Marks**	L3	CO2

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or

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12.	a.	Discuss how the use of bundled conductors reduces the overall inductance and capacitance of high-voltage transmission lines, and how this impacts power transmission efficiency.	**10 Marks**	L2	CO2
	b.	A 3-phase, 50 Hz, 66 kV overhead line conductors "abc" are placed in a horizontal plane a to b is 2m, b to c is 2.5m and a to c is 4.5m . The conductor diameter is 1·25 cm. If the line length is 100 km, calculate (i) capacitance per phase, (ii) charging current per phase, assuming complete transposition of the line.	**10 Marks**	L3	CO2

13.	a.	A 110 kV power supply need to be transferred from Bengaluru, Karnataka receiving station to Mysuru, Karnataka receiving station. Identify the type of transmission line can be used to transfer the power supply and justify, and also show how regulation and transmission efficiency are determined. Illustrate your answer with suitable vector diagrams.	**10 Marks**	L3	CO3
	b.	A single phase overhead transmission line delivers 1000 kW at 33 kV at 0·85 p.f. lagging. The total resistance and inductive reactance of the line are 15 Ω and 20 Ω respectively. Determine : (i) sending end voltage (ii) sending end power factor and (iii) transmission efficiency.	**10 Marks**	L3	CO3

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14.	a.	Explain the significance of the relationship between sending-end and receiving-end parameters in terms of the ABCD constants?	**10 Marks**	L2	CO3
	b.	Estimate the distance over which a load of 15000 kW at a p.f. 0·8 lagging can be delivered by a 3-phase transmission line having conductors each of resistance 1 Ω per kilometer. The voltage at the receiving end is to be 132 kV and the loss in the transmission is to be 5%.	**10 Marks**	L3	CO3

15.	a.	Explain the major components used in the overhead	**10 Marks**	L2	CO4

		construction of transmission line.			
	b.	The towers of height 30 m and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500 m. If the tension in the conductor is 1600 kg, find 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.	10 Marks	L3	CO4

Fig. 1

Or

16.	a.	Summarize the factors that influence the occurrence of corona discharge in electrical systems.	10 Marks	L2	CO4
	b.	In a 33 kV 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, find (i) the distribution of voltage over 3 insulators and (ii) string efficiency.	10 Marks	L3	CO4

17.	a.	Summarize the key requirements of an efficient distribution system.	08 Marks	L2	CO5
	b.	A 2-wire D. C distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A and 50A situated 500 m, 1000 m, 1600 m and 2000 m from the feeding point A. Each conductor has a resistance of 0·01 Ω per 1000 m. Compute the p.d. at each load point if a p.d. of 300 V is maintained at point A.	12 Marks	L3	CO5

Or

18.	a.	Explain the purpose and basic functions of a distribution system in an electrical network with necessary diagram.	08 Marks	L2	CO5

			12 Marks	L3	CO5
b.	Two tram cars (A & B) 2 km and 6 km away from a sub-station return 40 A and 20 A respectively to the rails. The sub-station voltage is 600 V d.c. The resistance of trolley wire is 0·25 Ω/km and that of track is 0·03 Ω/km. Calculate the voltage across each tram car.				

***** BEST WISHES *****