Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU
School of Engineering
Mid - Term Examinations – Nov 2024

Semester: V | **Date**: 06/11/2024

Course Code: EEE2021 | **Time**: 02:00pm – 03:30pm

Course Name: Transmission and Distribution | **Max Marks**: 50

Program: B. Tech (EEE) | **Weightage**: 25%

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. 2Mx5Q=10M

1	When discussing the types of power in AC transmission systems, which three terms should you remember, and why do they matter in power flow?	2 Marks	L1	CO 1
2	Why might a utility company need to know the differences between AC and DC distributors? Can you recall a basic reason why one might be chosen over the other?	2 Marks	L1	CO 1
3	Define the terms resistance, inductance, and capacitance as they relate to transmission lines.	2 Marks	L1	CO 2
4	Name the different types of conductors used in transmission lines.	2 Marks	L1	CO 2
5	Mention the typical range of distances and the voltage range that define a long transmission line.	2 Marks	L1	CO 3

Part B

Answer ALL Questions. Each question carries 10 marks. 4Q X 10M=40M

6	Explain the benefits of using higher voltage transmission in power systems. In what ways does raising the voltage influence power losses and enhance system efficiency?	10 Marks	L2	CO 1
	Or			
7	Outline the basic structure of a power system, highlighting its essential components and their functions. Please include a relevant diagram to support your explanation	10 Marks	L2	CO 1

8	Two conductors of a single phase line, each of 1 cm diameters, are arranged in a vertical plane with one conductor mounted 1 m above the other. A second identical line is mounted at the same height as the first and spaced horizontally 0·25 m apart from it. The two upper and the two lower conductors are connected in parallel. Determine the inductance per km of the resulting double circuit line.	10 Marks	L2	CO 2
	Or			
9	A 3-phase, 50 Hz, 66 kV overhead line conductors are placed in a horizontal plane as shown in Fig. 1. 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	L2	CO 2

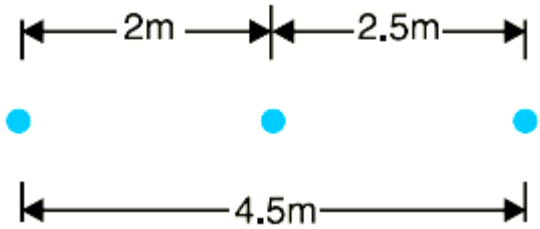

Fig. 1

10	How would you apply the concepts of Nominal T transmission line modeling to design an efficient and reliable transmission line for a medium-scale renewable energy project? What key parameters would you take into account to ensure optimal performance and power delivery?	10 Marks	L2	CO 3
	Or			
11	Identify the maximum length in km for a 1-phase transmission line having copper conductor of 0·775 cm2 cross-section over which 200 kW at unity power factor and at 3300V are to be delivered? The efficiency of transmission is 90%. Take specific resistance as 1.725 μ Ω cm	10 Marks	L3	CO3
12	A 3-phase, 50Hz, 150 km line has a resistance, inductive reactance and capacitive shunt admittance of 0·1 Ω, 0·5 Ω and 3×10^-6 S per km per phase. If the line delivers 50 MW at 110 kV and 0·8 p.f. lagging, determine the sending end voltage and current. Assume a nominal π circuit for the line.	10 Marks	L3	CO3
	Or			
13	A 3-phase, 50 Hz, 16 km long overhead line supplies 1000 kW at 11kV, 0·8 p.f. lagging. The line resistance is 0·03 Ω per phase per km and line inductance is 0·7 mH per phase per km. Calculate the sending end voltage, voltage regulation and efficiency of transmission.	10 Marks	L3	CO3