Course Code:23EE5T09

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

III - B. Tech I-Semester Supplementary Examinations (BR23), Mar/Apr - 2026

POWER SYSTEM-II (EEE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A and Part-B***

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	Define proximity effect?	(2M)	CO1	BL1
b)	What is the effect of bundling conductors on line parameters	(2M)	CO1	BL1
c)	Define voltage regulation.	(2M)	CO2	BL1
d)	What is Ferranti Effect in EHV transmission line?	(2M)	CO2	BL1
e)	What are Effects of Power System Transients?	(2M)	CO3	BL1
f)	What is the difference between lightning and switching transients?	(2M)	CO3	BL1
g)	Describe the expression for corona losses in power system?	(2M)	CO4	BL1
h)	What are the factors effecting corona?	(2M)	CO4	BL1
i)	What are types of insulators used in overhead lines?	(2M)	CO5	BL1
j)	Sketch the string chart in power system.	(2M)	CO5	BL3

PART–B (5X10 = 50M)

2a.	Explain the concept of GMR and GMD in symmetrical conductor configuration.	(5M)	CO1	BL2
b.	Derive the expression for capacitance in two wire (single-phase) transmission system?	(5M)	CO1	BL6
	(OR)			
3a.	Explain the bundled conductors with merits and demerits?	(5M)	CO1	BL2
b.	Derive the expression for inductance of a single-phase overhead transmission line.	(5M)	CO1	BL6
4a.	Derive the A, B, C and D parameters for normal –T method of a medium transmission line.	(5M)	CO2	BL6
b.	Discuss about surge impedance and surge impedance loading in transmission lines	(5M)	CO2	BL3
	(OR)			
5a.	Distinguish between low, medium and long transmission line.	(5M)	CO2	BL3
b.	A single-phase transmission line delivers 2000kw at 11kv lagging power factor of 0.85.The line has a resistance of 0.12Ω and reactance of 0.025Ω respectively. The line has 20km long calculate the line current, voltage drop and regulation.	(5M)	CO2	BL3
6a.	Discuss the traveling waves on a transmission line.	(5M)	C O3	BL3
b.	Explain in detail about the wave length and velocity of wave propagation by deriving necessary equations?	(5M)	CO3	BL2
	(OR)			

7a.	Define reflection co-efficient. A transmission line with a surge impedance (Z_S) of 50Ω is terminated with load impedance (Z_L) of 50-j50Ω.Find the reflection co-efficient at the load.	(5M)	CO3	BL1
b.	Describe the transient response of a line connected to a cable having different surge impedances.	(5M)	CO3	BL3
8	A 3-phase, 220 kV line consists of 20 mm diameter conductors spaced in a 6 meters delta configuration. Determine the disruptive critical voltage and visual corona voltage (local corona as well as general corona) for the following data: Temperature 250 C, Pressure 73 cm of mercury, surface factor 0.84, irregularity factor for local corona 0.72, irregularity factor for general corona 0.82 m.	(10M)	CO4	BL3
	(OR)			
9a.	Explain the methods reduce corona losses in transmission line.	(5M)	CO4	BL2
b.	Discuss advantages and disadvantages of Corona.	(5M)	CO4	BL3
10a.	Calculate tension and sag. An overhead line has a span of L=300 m. The conductor weighs 0.8kg/m. The ultimate strength is 4000kg, and the safety factor is 2.	(5M)	CO5	BL3
b.	Describe the concept of string efficiency in suspension insulators.	(5M)	CO5	BL3
	(OR)			
11a.	Explain the significance of stringing charts and sag templates in modern High voltage transmission line.	(5M)	CO5	BL2
b.	Describe briefly different types of insulators used in transmission lines.	(5M)	CO5	BL3

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