[M19 PS1105]

I M. Tech I Semester (R19) Regular Examinations
EHVAC TRANSMISSION
(ELECTRICAL & ELECTRONICS ENGINEERING)
MODEL QUESTION PAPER

TIME: 3 Hrs. **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks
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			CO	KL	M
		UNIT - I			
1.	a).	Explain the power handling capability and line losses in EHV lines and discuss the useful conclusions from it.	CO1	K4	7
	b).	Derive the expression for inductance of a Multi conductor line used in EHV AC transmission line	CO1	K4	8
		OR			
2.	a).	Explain different mechanical considerations that are taken in to accnt for transmission line performance.	CO1	K4	7
	b).	Write down the procedure for diagonalization of Inductance matrix L $=\begin{bmatrix} L_s & L_m & L_m \\ L_m & L_s & L_m \\ L_m & L_m & L_s \end{bmatrix}$ of a transposed line.	CO1	K4	8
		UNIT - II			
3.	a).	What are the effects of high electrostatic fields on biological organisms and human beings	CO2	K4	8
	b).	Starting from the fundamentals derive the expression for potential relations for multi conductor lines.	CO2	K4	7
		OR			
4.	a).	Explain surface voltage gradient on conductors in a bundle.	CO2	K4	7
	b).	Derive the expression for voltage (charge voltage relation) of two conductor line.	CO2	K4	8
		UNIT - III			
5.	a).	List t different corona loss formulae and explain each one	CO3	K4	7
	b).	Explain the generation and measurement of audio noise due to corona in EHV lines.	CO3	K4	8
		OR			
6.	a).	Explain in detail the measurement of Audible Noise.	CO3	K4	8
	b).	The field strength on the surface of a sphere of 1 cm radius is equal to the corona inception gradient in air of 30 KV/cm. Find the charge on the sphere.	CO3	K4	7
		UNIT - IV			
7.	a).	Explain cascade connection of components in shunt and series compensation.	CO4	K4	8
	b).	Explain the voltage control using synchrons condenser.	CO4	K4	7
		OR			
8.	a).	Explain the sub synchrons resonance in a series capacitor.	CO4	K4	8
	b).	Compare series and shunt compensation for EHV AC transmission	CO4	K4	7
		UNIT - V			
9.	a).	Explain in detail abt the SVC schemes.	CO4	K4	8
	b).	Explain how the harmonics are injected in to network by TCR.	CO4	K4	7
		OR			

10.	a).	Design a filter for supressing harmonics injected in to the system.	CO4	K4	8
	b).	A 100MVA 230KV 50Hz transformer has x_t = 12% and is connected to a line 200km long which has an inductance of 1mH/km. The filter, connected to the l.v. 33kv side of the transformer, is required to supress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used in 2mH.	CO4	K4	7