Internal Assessment Test 2

Sub:	Transmission and Distribution					Sub Code:	15EE43	Branch:	EEE
Date:	17/04/18	Duration:	90 min's	Max Marks:	50	Sem/Sec:	4A & 4B		OBE

	Answer any FIVE FULL Questions	MARKS	CO	RBT
1 (a)	Explain Ferranti effect.	[02]	CO1	L4
(b)	Explain with vector diagram the nominal T method for obtaining the performance of medium transmission line.	[08]	CO1	L4
2	Derive an expression for sending end voltage and current for long transmission line using rigorous solution.	[10]	CO1	L1
3	A *3-ϕ* transmission line 200 km long has the following constants : Resistance/phase/km = *0·16* Ω Reactance/phase/km = *0·25* Ω Shunt admittance/phase/km = $1·5 \times 10^{-6}$ *S* Calculate by rigorous method the sending end voltage and current when the line is delivering a load of 20 MW at 0·8 p.f. lagging. The receiving end voltage is kept constant at 110 kV.	[10]	CO1	L3
4 (a)	Find the most economical size of a single-core cable working on a 132 kV, 3- phase system, if a dielectric stress of 60 kV/cm can be allowed.	[05]	CO5	L3
(b)	Derive an expression for the thermal resistance of dielectric of a single-core cable.	[05]	CO5	L1

5 (a)	Discuss the advantages and disadvantages of corona.	[05]	CO5	L2
(b)	Explain the theory of corona formation.	[05]	CO5	L4
6 (a)	With a neat diagram, show the various parts of a high voltage single-core cable.	[05]	CO5	L2
6 (b)	Find an expression for the most economical conductor size of a single core cable.	[05]	CO5	L3
7 (a)	Explain intersheath grading in cables.	[10]	CO5	L4

8 (a) A 100-km long 3-phase, 50-Hz transmission line has following line constants: [08] CO1 L3

Resistance/phase/km = $0·1$ Ω

Reactance/phase/km = $0·5$ Ω.

Susceptance/phase/km = 10×10^{-6} S

If the line supplies load of 20 MW at 0·9 p.f. lagging at 66 kV at the receiving end, calculate by nominal π method: (i) sending end power factor (ii) regulation (iii) transmission efficiency.

8 (b) What do you understand by generalized circuit constants of a transmission line? What is their importance? [02] CO1 L2