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CMR INSTITUTE OF TECHNOLOGY, BENGALURU. ACCREDITED WITH A+ GRADE BY NAAC

Internal Assessment Test 3

Sub:	Transmission and Distribution					Sub Code:	15EE43	Branch:	EEE	
Date:	21/05/18	Duration:	90 min's	Max Marks:	50	Sem/Sec:	4A		OBE	

Answer any FIVE FULL Questions

		MARKS	CO	RBT
1	Explain radial, parallel and loop feeders for AC distribution system.	[10]	CO3	L4
2	A single phase ring distributor ABC is fed at A. The loads at B and C are 20 A at 0.8 p.f. lagging and 15 A at 0.6 p.f. lagging respectively; both expressed with reference to the voltage at A. The total impedance of the three sections AB, BC and CA are (1 + j 1), (1+ j2) and (1 + j3) ohms respectively. Find the total current fed at A and the current in each section. Use Thevenin's theorem to obtain the results.	[10]	CO3	L3
3	A 3-phase, 4-wire system supplies power at 400 V and lighting at 230 V. If the lamps in use require 70, 84 and 33 amperes in each of the three lines, what should be the current in the neutral wire? If a 3-phase motor is now started, taking 200 A from the lines at a p.f. of 0·2 lagging, what should be the total current in each line and the neutral wire? Find also the total power supplied to the lamps and the motor.	[10]	CO3	L3
4 (a)	Non-reactive loads of 10 kW, 8 kW and 5 kW are connected between the neutral and the red, yellow and blue phases respectively of a 3-phase, 4-wire system. The line voltage is 400V. Calculate (i) the current in each line and (ii) the current in the neutral wire.	[07]	CO3	L3
(b)	Explain 3-phase 4 wire star connected unbalanced loads for AC distribution system.	[03]	CO3	L4

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5	Derive an expression for the inductance per phase for a 3-phase overhead transmission line when conductors are unsymmetrically placed but the line is completely transposed.	[10]	CO5	L4
6	Derive an expression for the capacitance of a single phase overhead transmission line.	[10]	CO5	L4
7	Deduce an expression for line to neutral capacitance for a 3-phase overhead transmission line when the conductors are (i) symmetrically placed (ii) unsymmetrically placed but transposed.	[10]	CO5	L4
8 (a)	Two conductors of a single phase line, each of 1 cm diameter, 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.	[05]	CO5	L3
8 (b)	A 3-phase overhead transmission line has its conductors arranged at the corners of an equilateral triangle of 2 m side. Calculate the capacitance of each line conductor per km. Given that diameter of each conductor is 1·25 cm.	[05]	CO5	L3

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