Reg.No. _____

Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

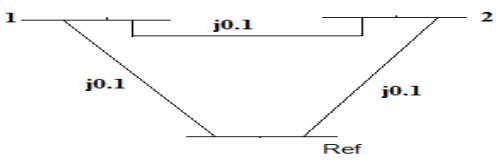
End Semester Examination – Nov/Dec – 2016

Semester : 2016-17 ODD

Code : 14EE2014 **Duration : 3hrs**

Sub. Name : POWER SYSTEM ANALYSIS **Max. marks : 100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Discuss about the need of power system analysis, planning and operation.	CO2/ CO1	10
	b.	Define Per unit representation and list out the significant of per unit representation.	CO2	10
		(OR)		
2.	a.	Two generators rated at 10MVA, 11KV and 15MVA, 11KV respectively are connected in Parallel to bus. The bus bar feed two motors rated 7.5MVA and 10 MVA respectively. The rated voltage of the motor is 9 KV. The reactance of each generator is 12% and that of each motor is 15% on their own ratings. Assume 50MVA, 10KV base and draw the reactance diagram.	CO2	20
3.	a.	Derive the fault current expression for single line to ground fault occurs in a power system network.	CO2/ CO1	12
	b.	Obtain the Y_{Bus} using singular transformation for the 3-bus sample system shown in below Figure. 	CO2/CO 3	08
		(OR)		
4.	a.	Explain briefly about the formation of bus impedance matrix with an illustration.	CO2/CO 3	20
5.	a.	Derive Gauss-Seidal algorithm for load flow studies. Give the flow chart and step by step procedure to implement the algorithm.	CO2/CO 3	20
		(OR)		
6.	a.	Explain the step by step computational procedure for the Newton Raphson method in load flow studies with appropriate expression.	CO2/CO 1	20
7.	a.	A power plant has three units with the following fuel cost equations: $F_1 = 0.05P_1^2 + 23.5P_1 + 700\ Rs./hr.$ $F_2 = 0.2P_2^2 + 20P_2 + 850\ Rs./\ hr.$ $F_3 = 0.09P_3^2 + 18P_3 + 960\ Rs/hr.$ Maximum and minimum loading on each unit is 150 MW and 40 MW, the demand is 275MW. Find the optimal scheduling and fuel cost.	CO2/ CO3	12
	b.	Write the equality and inequality constraints for economic dispatch problem.	CO2	08
		(OR)		
8.	a.	Explain the various constraints in unit commitment problem with suitable examples.	CO2/ CO3	10

	b.	Give the elementary idea of optimal load scheduling of Hydro - Thermal plants.	CO2	10
		Compulsory:		
9.	a.	Write down the step by step procedure to solve the swing equation using Runge Kutta Method.	CO2/CO 1	10
	b.	Brief about Power Quality issues,consequences and its International standards	CO2/CO 1	10

ALL THE BEST