KONERU LAKSHMAIAH EDUCATION FOUNDATION

(Deemed to be University, Estd. u/s. 3 of UGC Act 1956)

B.Tech - Even Sem : End Semester Exam

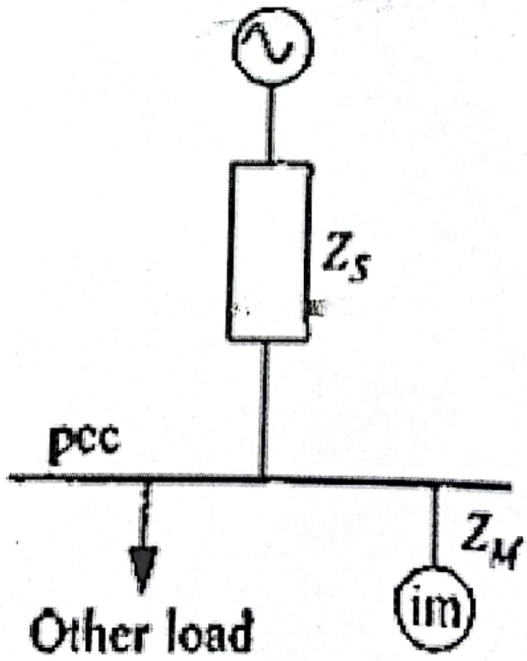
Academic Year: 2021-2022

19EE3105 - POWER QUALITY

Set No: 3

Time: | Max.Marks: 100

Answer All Questions

S.NO		Choice	Options	Marks	CO	CO BTL	COI BTL
1.	. Demonstrate different power quality events and variations	choice Q-2		10Marks	CO1	2	1
2.	Differentiate between the following. a. Noise and notching b. transients and harmonics c, voltage imbalance and voltage fluctuation			10Marks	CO1	2	1
3.	Comment on the need for quality of supply and quality of consumption.Explain the relation between current quality, voltage quality and power quality	choice Q-4		15Marks	CO1	2	2
4.	Explain the causes of interruptions. Classify different voltage magnitude events with respect to time Discuss different standards			15Marks	CO1	2	2
5.	. Explain the influence of short interruption on the working of motors, drives and electronic equipment	choice Q-6		10Marks	CO2	4	2
6.	Explain in detail the monitoring of short interruptions for maintaining power quality			10Marks	CO2	4	2
7.	a). Suggest a suitable procedure by usingthe reclosers for fuse saving in distribution systems. b.Instantaneous values of voltages and currents in single phase system are given by the following equations. v(t)=15+(sqrt (2)(230)(sin(wt+30)+ sin(3wt -45))V i(t)= 8+ (sqrt (2)(12sin(wt-30)+16sin(3wt -60) A Analyze the distribution of active, reactive in apparent power. Compute the power factor	choice Q-8		15Marks	CO2	4	4
8.	Comment on the effect of single phase tripping (with short circuit still present) on current during the fault. b. A single phase source 220V 50Hz is supplying an RL load 10 ohm and 25OmH respectively. Compute average real and apparent power. Also compute the power factor.If unity power factor is desired, suggest the suitable compensator and justify your answer. Compute the value of the compensating element required			15Marks	CO2	4	4
9.	Demonstrate the computation of voltage sag magnitude for a non radial system when local generator presence is there	choice Q-10		10Marks	CO3	3	2
10.	Do you agree with the statement that Voltage sag is a global problem. Illustrate the general process to find the sag magnitude			10Marks	CO3	3	2
11.	a. Comment on the effect of a high impedance fault occurrence in a three phase system on voltage magnitude and phase angle at the equipment terminals. b. It is required to design a supply system that can support a 5 MVA motor, with a minimum permissible voltage of 90% during starting. The starting current is six times the nominal current. Suggest suitable source strength 	choice Q-12		15Marks	CO3	3	3
12.	a. Suggestsuitable usage of monitoring equipment to measure the voltage sag duration in power system. b) Calculate the voltage sag for the fault at 11kV bus. The distance to the fault is 10 km. The source impedance is 66.08% and the fault impedance for each kilometre is 27.27%. Comment on the value of the sag in the distance to the fault is 5 km.			15Marks	CO3	3	3
13.	. Describe different wiring and grounding problems and the possible solutions to those problems	choice Q-14		10Marks	CO4	4	2
14.	Explain the effect of shunt controller on load side in a combined shunt and series controller on voltage sag.			10Marks	CO4	4	2
15.	a.Suggest suitable options available for improving the equipment immunity in a power system. b. Consider a solid cylindrical piece of material with a length of 50cm and a radius of 25 cm. given specific mass is 2500 kg/m3. Find the mass and inertia of this piece of material? Assuming that the cylinder is rotated at the "moderate" speed of 3000 rpm, evaluate the amount of kinetic energy stored in the rotating cylinder?	choice Q-16		15Marks	CO4	4	4
16	a. Can improving the equipment immunity mitigate the voltage sag issues? Give your comment. b. Given the source impedance is Zs = 2 pu and the feeder impedance is z = 1.8 pu/km. If the characteristic voltage is 0 6 pu. compute the initial voltage. Evaluate the critical distance such that the sag will not lead to a trip if a single line to ground fault occurs somewhere in the system.			15Marks	CO4	4	4

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