Sanjay Ghodawat University, Kolhapur 2019-20

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017 EXM/P/09/01

Year and Program:2019-20 **School of Technology** **Department of Electrical Engineering**

Course Code: ELE 5093 **Course Title: Power Quality Issues in Power System** **Semester – I**

Day and Date Monday 23/12/19 **End Semester Examination (ESE)** **Time:** 3 hr 10.30am to 1.30pm **Max Marks: 100**

Instructions:
1) All questions are compulsory.
2) Assume suitable data wherever necessary.
3) Figures to the right indicate full marks.

			Marks	Bloom's Level	CO
Q.1		**Solve the following**			
	a)	Explain power quality related issues in distribution system.	07	L_2	CO1
		OR			
	a)	Write short notes on power quality measurement system. What are the characteristics of power quality measurement equipment?	07	L_3	CO1
	b)	Explain the various types of power quality disturbances and impact of power quality.	08	L_3	CO2
		OR			
	b)	Explain short duration voltage variation in detail on the basis of. (i) Instantaneous (ii) Momentary (iii)Temporary	08	L_3	CO2
Q.2		**Solve any following**			
	a)	Explain the meaning by Load Balancing, how it is tackled?	07	L_4	CO3
		OR			
	a)	Explain voltage flicker according to IEEE standards 1159.	07	L_3	CO3
	b)	What are the different sources of transient over voltage? Discuss the capacitor switching transient.	08	L_2	CO4
		OR			

	b)	Distinguish between impulsive transient and oscillatory transients	08	L_5	CO4
Q.3		**Solve any Two**			
	a)	Explain harmonic analyzer with the neat block diagram.	08	L_4	CO1
	b)	Explain the following steady state disturbances. (i) Magnitude (ii) Unbalance (ii) Harmonics (iv) Flicker	08	L_4	CO2
	c)	Justify Neutral current potential are mostly caused by unbalance and odd triplen harmonics.	08	L_5	CO3
	d)	Explain the impact on users protection mitigation.	08	L_4	CO4
Q.4		**Solve any Two**			
	a)	Define the harmonics and classify harmonics based on types of characterization.	09	L_2	CO5
	b)	Discuss harmonics mitigation techniques in detail.	09	L_2	CO5
	c)	What are the guidelines issued by IEEE for harmonic voltage and current limitation?	09	L_2	CO5
Q.5		**Solve any Two**			
	a)	Discuss the effect of series and shunt compensation on voltage stability and draw single line diagram.	09	L_2	CO6
	b)	Draw the schematic diagram for dynamic voltage restorer, depict the waveforms and illustrate how the load end voltage can be maintained constant during sag.	09	L_3	CO6
	c)	Explain the principle of DSTATCOM with block diagram.	09	L_4	CO6
Q.6		**Solve any Three**			
	a)	Explain harmonic sources from commercial and industrial loads.	06	L_2	CO5
	b)	Distinguish between passive filter and active filter in detail with their system configuration.	06	L_5	CO5
	c)	Explain the working principle of unified power quality conditioners.	06	L_4	CO6
	d)	Express the important application of DVR.	06	L_6	CO6

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