



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2018-19

EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of Electrical Engineering

Course Code: ELE 5093

Course Title: Power Quality
Issues in Power System

Semester – I

Day and Date-

Wednesday, 26/12/2018

End Semester Examination
(ESE)

Time: 10.00am-1.00pm Max Marks: 100

Instructions:

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

Q.1	Solve the following	Marks	Bloom's Level	CO
a)	Describe the various IEEE and IEC power quality standards.	07	L ₂	CO1
	OR			
a)	Discuss the impact of power quality on utility and consumers.	07	L ₄	CO1
b)	With a waveform sketch and explain the following terms.	08	L ₂	CO2
	i) Voltage sag ii) Voltage interruption			
	iii) Voltage swells iv) Sag with harmonics			
	OR			
b)	Explain in detail about the following steady state disturbances.	08	L ₂	CO2
	i) Magnitude ii) Unbalance			
	iii) Harmonics iv) Flicker			
Q.2	Solve the following			
a)	Classify the different power quality problems.	07	L ₂	CO3
	OR			
a)	Illustrate the effects of following related to power quality problems.	07	L ₃	CO3
	i) Poor load factor ii) Loads containing harmonics			
b)	What are the different sources of transient over voltages? Discuss the capacitor switching transient.	08	L ₄	CO4
	OR			
b)	What are transient over voltages? Explain in detail any two types of transient over voltages.	08	L ₃	CO4

Q.3	Solve any Two			
a)	Explain harmonic analyzer with the neat block diagram.	08	L ₂	CO1
b)	Discuss the sources of sags and interruption.	08	L ₄	CO2
c)	Compare the following related to power quality problems. 1) DC offset in loads 2) Unbalanced loads.	08	L ₄	CO3
d)	What is impact of transients on power quality? Classify the transients that occur in a power system.	08	L ₃	CO4
Q.4	Solve any Two			
a)	List and explain devices for controlling harmonic distortion.	09	L ₃	CO5
b)	Distinguish between the sources of harmonics from commercial and industrial loads.	09	L ₄	CO5
c)	Define total harmonic distortion .Explain the procedure for calculating the THD.	09	L ₂	CO5
Q.5	Solve any Two			
a)	What is compensation technique? Describe shunt compensation with its single line diagram?	09	L ₂	CO6
b)	Discuss the effect of series and shunt compensation on voltage stability. Also draw their single line diagrams.	09	L ₄	CO6
c)	Write the principle of DVR and explain its working in detail to control the voltage.	09	L ₂	CO6
Q.6	Solve any Three			
a)	Discuss the operation of active series compensator with necessary circuit diagram	06	L ₄	CO5
b)	What are the two indices used in power system. Explain about it briefly.	06	L ₂	CO5
c)	Draw the DVR model and explain working of different components used in it.	06	L ₂	CO6
d)	Illustrate the use of different methods of injecting the compensating voltage using DVR.Also draw their vector diagrams.	06	L ₃	CO6
