Seventh Semester B.Tech. Degree Examination, November 2017  
(2013 Scheme)  
13.706.4 : POWER QUALITY (E) (Elective – III) 

Time : 3 Hours  
Max. Marks : 100

Instruction : Answer all questions in Part – A and one full question each from each Module in Part – B.

PART – A

Questions carry 2 marks each:

1. What is meant by voltage sag and voltage swell as per IEEE 1159-1995 standard?
2. What are the sources of Sag?
3. What are the basic power system reliability indices?
4. What are the devices used for over voltage protection?
5. What are the sources of transient over voltage?
6. Find the total harmonic distortion of the waveform having magnitude of fundamental unity and 3rd, 5th, 7th and 9th harmonics, reciprocal of harmonic number.
7. How distributed Generation affects the power quality?
8. What are the effects of harmonic in drives?
9. What is the function of harmonic analyzer?
10. What is meant by spectrum analyzer? (10×2=20 Marks)

PART – B

Module – I

11. Discuss the effect of voltage sag on (a) computers, (b) drives and (c) Consumer electronics. (6+7+7)
12. How can voltage sag be monitored? How voltage sag can be mitigated? (10+10)

P.T.O.
Module – II

13. Explain how long and short duration interruptions affect the performance of equipments.  

14. How interruptions can be (a) monitored and (b) mitigated.  

Module – III

15. The input current drawn by a nonlinear load is a square wave oscillating between −5A and +5A with a frequency of 50 Hz. Find out the total harmonic distortion of the input current. Also find out input power factor.  

16. What is Active Power Filter (APF)? How it can be used to mitigate current harmonic?  

Module – IV

17. Explain in detail about (a) flicker meter and (b) power line disturbance analyzer.  

18. What are the various power quality monitoring IEEE 1159 and IEC standards? Explain these standards in detail.  

(4×20=80 Marks)