Reg. No. : .................................................
Name : ..................................................

Seventh Semester B.Tech. Degree Examination, December 2016
(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. Differentiate between impulsive and oscillatory transients in power system.

2. How does a short circuit fault create sag in the system voltage?

3. What are the causes of long duration and short duration interruptions?

4. How load equipments are protected from over voltages?

5. Differentiate between voltage sag and interruption.

6. Define Total Harmonic Distortion (THD) and Distortion Index (DIN).

7. How the 3rd, 5th and 7th harmonics of system voltage affects the performance of a 3 phase motor?

8. Write the sources of current harmonics.

9. State the objective of power quality monitoring.

10. List the major power quality monitoring equipments.  (10×2 = 20 Marks)

PART – B

Module – I

11. a) Explain how voltage sag and voltage swell are formed.

     b) How voltage sag and swell can be mitigated?

     (8+12)

     P.T.O.
12. a) What are the major power quality issues?
   
b) Explain the causes of these issues. (10+10)

Module – II

13. Define and explain different electric system reliability indices. 20

14. Discuss the sources of over voltage due to following phenomenon.
   
a) Capacitor switching
   
b) Lightning. (10+10)

Module – III

15. A single phase uncontrolled rectifier is driving a DC motor. Motor current is constant 10 A. Find out the total harmonic distortion of the input current. Also find out input power factor. (15+5)

16. Discuss the characteristics of harmonics generated by commercial and industrial loads. 20

Module – IV

17. a) What are the power quality measuring instruments?

   b) Explain any two of them in detail. (6+14)

18. What are the various power quality monitoring standards? Explain these standards for different power quality problems. (6+14)

(4×20 = 80 Marks)