Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PEEL 5403

Eighth Semester Regular Examination – 2015

ELECTRICAL POWER QUALITY

BRANCH : ELECTRICAL

QUESTION CODE : J 242

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What are symptoms of poor power quality ?

   (b) How are power quality issues characterized ?

   (c) What way transients are different from harmonics ?

   (d) What are the sources of voltage sags and interruption ?

   (e) Mention at least two causes of harmonics.

   (f) What is inter-harmonics ?

   (g) What are the problems associated with ferro resonance ?

   (h) Differentiate between transient voltage surge suppressors(TVSS) and surge arrestors.

   (i) What is the requirement of power quality monitor ?

   (j) Mention the basic categories of instruments for harmonic analysis.

2. (a) What are the various causes of power imbalance in power system ? Explain briefly. 5

   (b) Explain long duration voltage variation characteristics of power quality event. 5

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3. Describe one ride through technique against voltage sag in power utility system with relevant circuit diagram and wave forms. 10

4. (a) Discuss the capacitor switching transient with suitable diagram. 5

   (b) Explain basic principles of over voltage protection. Which are the devices used for over voltage protection ? 5

5. (a) How will you find the harmonic sources from point of common coupling ? Give the identification procedure on the basis of voltage indices. 5

   (b) Explain briefly how current distortion affects the voltage distortion under the presence of harmonics. 5

6. (a) Explain various causes of voltage flickers. How voltage flickers are measured ? 5

   (b) Explain the utility voltage regulation using static capacitors with relevant circuit and phasor diagram. 5

7. (a) Explain procedure for selection of monitoring equipments and use of various equipments required for power quality monitoring. 5

   (b) Explain the role of intelligent systems in power quality monitoring. 5

8. Write short notes any **two** of the following : 5×2

   (a) Voltage sag performance estimation

   (b) Utility system lightning protection

   (c) Effects of harmonic distortions

   (d) Power quality monitoring standards.