| BIEEE-013 |

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

ꗌ05ꗌ3   **June, 2018**

BIEEE-013 : POWER QUALITY ISSUES AND REMEDIAL MEASURES

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any five questions. Each question carries equal marks. Use of scientific calculator is allowed.*

1. (a) What are the causes for reduction in power quality ? Explain with example in context of India.   7

   (b) Explain the different power quality standards used in India.   7

2. (a) Define voltage sag. What are the causes of voltage sag ?   6

   (b) What are the effects of voltage sag having high magnitude and long duration on drives and other peripherals ?   8

3. (a) What are the causes of short and long interruptions ? What are their ill effects on various equipments ?   *5*

   (b) Explain the process of monitoring the interruptions ?   *5*

   (c) What are the various ways to mitigate the interruptions ?   *4*

4. A 400 V, 50 Hz, 3-phase line delivers 200 kW at 0·8 p.f. lagging. It is desired to raise the line power factor to unity using passive filtering by installing shunt capacitors. Calculate the capacitance of each unit if they are connected in (i) star, and (ii) delta.   *14*

5. (a) Explain the construction and working of three-phase automatic power factor controller (APFC).   *7*

   (b) What are the different control methods for single-phase automatic power factor controller (APFC) ? Explain any one in detail.   *7*

6. (a) Describe the need for active harmonic filtering.   *4*

   (b) Explain the harmonic filtering using shunt injection filters for a three-phase three-wire transmission system.   *10*

7. Write short notes on any *two* of the
   following :   2×7=14

   (a) STATCOM

   (b) Harmonics in SMPS

   (c) Dynamic Voltage Restorer

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