

**B.Tech. in ELECTRICAL ENGINEERING  
(BTELVI)**

**Term-End Examination**

**June, 2013**

**BIEEE-013 : POWER QUALITY ISSUES AND  
REMEDIAL MEASURES**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Attempt any five questions.*

*Each question carry equal marks.*

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| 1. | (a) | Explain the major power quality issues in detail.  | 7 |
|    | (b) | What are the different power quality standards ? Describe them.  | 7 |
| 2. | (a) | Explain the characteristics of power quality events in short duration variations and long duration variations. | 7 |
|    | (b) | What are the different voltage sag mitigation techniques ? Explain in detail.                                  | 7 |
| 3. | (a) | What are harmonics ? Explain harmonic distortion with relevant waveforms.                                      | 7 |
|    | (b) | Discuss SMPS and fluorescent lamps as sources of harmonics.  | 7 |

4. (a) Explain briefly the following harmonic filters : 7  
(i) Active Filters and  
(ii) Passive Filters
- (b) Explain in detail the operating principle of shunt active power filter with neat schematic. 7
5. (a) Explain the principle of DVR operation used for sag mitigation. 7  
(b) Discuss in detail about the active series compensators. 7
6. (a) What is the role of UPS in maintaining power quality ? Discuss in detail. 7  
(b) Explain the causes of low power factor. Describe any method for power factor correction. 7
7. (a) What are the reasons for grounding ? Discuss in detail. 7  
(b) Explain the typical wiring and grounding problems. 7
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