Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14EE2033** | **Duration :** | **3hrs** |
| **Sub. Name :** | **HARMONICS AND POWER QUALITY** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | State IEEE definitions of any six power quality disturbances. | CO1 | 10 |
| b. | Draw the power acceptability curve and explain its application to measure the power quality issues. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Write short notes on   1. Waveform distortion 2. Short interruptions flicker | CO2 | 10+10 |
|  |  |  |  |  |
| 3. | a. | With aid of block diagram, explain the operating principle of three phase static AC/DC converter. | CO1 | 10 |
| b. | Describe the working principles of pulse modulated device. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Explain the impact of sensitive loads in power quality measurements. | CO2 | 10 |
| b. | Describe any two mitigation techniques for power quality measures. | CO2 | 10 |
|  |  |  |  |  |
| 5. |  | Explain the analysis of voltage sag using Detroit Edison sag score and Lost Energy Index. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Write brief notes on   1. Capacitor switching transient 2. Lightning load switching | CO2 | 10+10 |
|  |  |  |  |  |
| 7. | a. | Describe various types of harmonics occurred in distribution system. | CO2 | 10 |
| b. | Explain the concept of harmonic power flow with illustration. | CO2 | 10 |
| (OR) | | | | |
| 8. |  | Describe the designing procedure of active and passive filters to analyze the power quality issues. | CO3 | 10+10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the principles of series and shunt compensators for power quality assessment. | CO2 | 10 |
| b. | Briefly describe the control strategies of UPQC. | CO3 | 10 |