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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **15EE2005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **TESTING AND INSTALLATION OF POWER SYSTEM APPARATUS** | **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. | Comment on the human tolerance level to electric shock and the order of resistance to the shocks. | CO1 | 10 |
| b. | State the objective of safety management and the various means by which it could be achieved. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Distinguish clearances from creepage distances and their significance with a schematic sketch denoting the clearance and creepage distance. | CO1 | 10 |
| b. | Distinguish primary shock from secondary shock. Assess a person who gets electric shock and the causes behind the severity of shock. | CO1 | 10 |
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| 3. | a. | Give the expression for Dielectric Absorption ratio and also present the circuit diagram of Volt-Amp method for DC resistance measurement for testing a conducting path. | CO2 | 10 |
| b. | Mention the various types of tests performed in an electrical equipment. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Explain in detail the two types of Impulse test with a neat circuit diagram. Also mention the procedure and conditions of the test. | CO2 | 10 |
| b. | State the principle of DC insulation resistance measurements. Describe the Megger and procedure of its use. | CO2 | 10 |
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| 5. | a. | Interpret harmonics in power supply. Give the permissible levels of harmonics in power supply from distribution network. | CO3 | 10 |
| b. | Illustrate the effects and remedies for the following disturbances in power system:  (i) Switching surges (ii) Arc furnace operation  (iii) Thyristor control (iv) Load throw off  (v) Frequency fall (vi) Voltage rise  (vii) Frequency rise. | CO3 | 10 |
| **(OR)** | | | | |
| 6. | a. | Illustrate the various variables with their tolerance range that would decide the quality of power as per IEEE Std. 446,1987 and list the power quality improvement facilities for each variable of the electric power supply. | CO3 | 10 |
| b. | Demonstrate the procedure of high voltage tests on rotating machine with the help of a diagram. | CO3 | 10 |
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| 7. | a. | Evaluate the various types of sub-stations for rated voltages of 12kV, 36kV, 66kV and above. | CO1 | 10 |
| b. | Comment on the following terms in a substation:  (i) Fire fighting System. (ii) Maintenance Zoning. | CO1 | 10 |
| **(OR)** | | | | |
| 8. |  | List the substation equipments and describe the layout of typical substation layout. | CO1 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | With a diagram, explain the parts of a bipolar HVDC link. | CO2 | 10 |
| b. | State the requirements of AC Harmonic filters in HVDC substation. | CO2 | 10 |