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



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

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| **Code :** | **17EE3033** | **Duration :** | **3hrs** |
| **Sub. Name :** | **HVDC TRANSMISSION** | **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. | Bring out the historical development, types and limitations of HVDC systems. | CO1 | 14 |
| b. | Compare AC and DC transmission. | CO1 | 6 |
| **(OR)** | | | | |
| 2. | a. | Explain the three phase full bridge converter with necessary waveform diagrams. | CO1 | 10 |
| b. | Describe the economics of transmission, performance and reliability of HVDC system. | CO2 | 10 |
|  |  |  |  |  |
| 3. | a. | Discuss the capacitor commutated converter with neat diagram. | CO2 | 10 |
| b. | Describe various configurations of voltage source converter. | CO2 | 10 |
| **(OR)** | | | | |
| 4. |  | Explain the line commutated converter through Gratez bride without overlap. | CO3 | 20 |
|  |  |  |  |  |
| 5. | a. | Illustrate the DC link control and its control characteristics. | CO3 | 15 |
| b. | List the various control hierarcy of HVDC systems. | CO3 | 5 |
| **(OR)** | | | | |
| 6. |  | Discuss the firing angle control of a converter with necessary diagrams and waveforms. | CO4 | 20 |
|  |  |  |  |  |
| 7. |  | Describe the various converter faults with necessary diagrams. | CO4 | 20 |
| **(OR)** | | | | |
| 8. | a. | Explain the functions of smoothing reactor. | CO5 | 10 |
| b. | Discuss the methods for protection against over current and over voltages. | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Describe the following in detail:  i) problems due to harmonics;  ii) characteristics and non-characteristics harmonics;  iii) DC Filters and Noise. | CO6 | 20 |