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



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

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| **Code :** | **14EE2010** | **Duration :** | **3hrs** |
| **Sub. Name :** | **POWER ELECTRONICS** | **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. | Explain the Static and switching characteristics of Thyristor. | CO1 | 15 |
| b. | Compare Power MOSFET and Power BJT. | CO1 | 5 |
| **(OR)** | | | | |
| 2. | a. | Justify - TRIAC is operated in four quadrants. | CO1 | 10 |
| b. | Mention the major features, drawbacks and applications of IGBT. | CO1 | 10 |
|  |  |  |  |  |
| 3. |  | Explain the operation of a single phase fully controlled full bridge converter in rectifier mode with neat diagram and waveforms. | CO2 | 20 |
| **(OR)** | | | | |
| 4. | a. | Compare single phase full and semi controlled converters. | CO2 | 7 |
| b. | Draw the circuit diagram of single phase dual converter. | CO2 | 7 |
| c. | Mention the significance of freewheeling diode. | CO2 | 6 |
|  |  |  |  |  |
| 5. | a. | Suggest a DC to DC Converter that can be operated in all the four quadrants. | CO3 | 15 |
| b. | List out the applications of Cycloconverter. | CO3 | 5 |
| **(OR)** | | | | |
| 6. |  | Fixed AC voltage can be converted to variable AC Voltage – Justify this converter with necessary circuit and waveforms for R-Load. | CO4 | 20 |
|  |  |  |  |  |
| 7. |  | Describe the operation of three phase inverter in 180° mode conduction with necessary circuit diagram, waveforms. Derive the expression for the RMS value of phase voltage and line voltage. | CO5 | 20 |
| **(OR)** | | | | |
| 8. | a. | Explain PWM and its advantages. Elucidate any two PWM technique used for inverter circuits. | CO5 | 15 |
| b. | Compare CSI and VSI. | CO5 | 5 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the working of HVDC systems with relevant circuit diagram. | CO6 | 10 |
| b. | Explain the operation of UPS with neat circuit diagram. | CO6 | 10 |