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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EE2038** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Advanced Topics in 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. | Describe the basic structure of MOS controlled thyristor (MCT). Give its equivalent circuit and explain the turn-on and turn-off processes. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Explain the working of power MOSFET. Draw the steady state characteristics with neat circuit diagram. | CO1 | 14 |
| b. | Compare power MOSFET with IGBT (Write any six points). | CO1 | 6 |
| 3. | a. | Mention the importance of cooling of power electronic devices. Explain various methods. | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | With a neat diagram explain a driver circuit. Mention the purpose of driver circuits. | CO1 | 10 |
| b. | Explain voltage and current protection methods for power electronic devices. | CO1 | 10 |
| 5. | a. | With neat waveforms, explain sinusoidal pulse width modulation for inverters. | CO2 | 14 |
| b. | Write the advantages and disadvantages of cascaded inverter. | CO2 | 6 |
| (OR) | | | | |
| 6. | a. | Explain the concept of multilevel inverters. Explain any two types. | CO2 | 20 |
| 7. | a. | With neat circuit diagram, explain single phase impedance source inverter. | CO1 | 14 |
| b. | Give a comparison of CSI, VSI and ZSI (Write any six points). | CO1 | 6 |
| (OR) | | | | |
| 8. | a. | Explain the working of three phase matrix converter with the help of a neat diagram. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. | a. | What are resonant converters? Explain with necessary circuit diagram and waveforms the operation of series resonant inverters. | CO2 | 20 |

ALL THE BEST