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



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

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| **Code :** | **14EE2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRIC DRIVES AND CONTROL** | **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. | Discuss the various types of power modulators which are useful for electric drives. | CO1 | 12 |
| b. | With neat curves and equations, explain the components of load torque. | CO1 | 8 |
| **(OR)** | | | | |
| 2. |  | Identify the suitable closed loop control technique for the following applications and explain in detail.   1. Electric Vehicle on road 2. Electric Train 3. Servo Application | CO3 | 20 |
|  |  |  |  |  |
| 3. | a. | Classify and discuss in detail the motor duty cycle based on its heating and cooling curves. | CO1 | 15 |
| b. | Derive the expression for equivalent current for the intermittent loads. | CO1 | 5 |
| **(OR)** | | | | |
| 4. | a. | Discuss the various braking methods for the DC drives. | CO1 | 10 |
| b. | Derive the torque-speed equation for separately excited and self excited DC motor. | CO1 | 10 |
|  |  |  |  |  |
| 5. |  | Prove that “continuous mode operation of fully controlled rectifier fed separately excited DC motor can give good speed regulation” , with necessary diagrams, waveforms and equations. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Design a propulsion system for the solar based electric vehicle which consists of 4.1kW DC shunt motor for the motoring and braking operation. | CO3 | 20 |
|  |  |  |  |  |
| 7. | a. | With neat diagram, explain the closed loop speed control of voltage source inverter fed induction motor drive. | CO3 | 15 |
| b. | Discuss about cycloconverter control of induction motor drive. | CO2 | 5 |
| **(OR)** | | | | |
| 8. |  | Identify suitable control scheme to achieve constant torque and constant power for the wound rotor induction motor drive and explain with appropriate diagrams. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Classify permanent magnet AC motor drives and explain in detail about the control techniques with neat diagrams and waveforms. | CO3 | 20 |