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



**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **14EE2019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SPECIAL ELECTRICAL MACHINES** | **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 a typical torque-speed characteristics of Synchronous Reluctance motor with a neat sketch. | CO1 | 15 |
| b. | List the types of synchronous reluctance motor. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Compute the step angle and resolution of a single-stack, 4-phase, 8/6 pole VR Stepper motor. | CO1 | 5 |
| b. | Derive the mechanism of torque production of variable reluctance stepper motor. | CO1 | 15 |
|  |  |  |  |  |
| 3. | a. | Distinguish between VR, PM and hybrid stepper motor. | CO1 | 10 |
|  | b. | Describe briefly about the self-control of permanent magnet synchronous motor with a neat block diagram. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Deduce the basic voltage equation of SRM. | CO1 | 10 |
|  | b. | Derive the expression for instantaneous torque of a switched reluctance motor. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Generate the role of stepper motor in closed loop operation using microprocessor. | CO2 | 15 |
|  | b. | Compare the mechanical and electronics commutator. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Derive the torque and e.m.f equations of a permanent magnet brushless D.C motor. | CO2 | 15 |
|  | b. | Mention the important features of PMSM. | CO2 | 5 |
|  |  |  |  |  |
| 7. |  | Sketch and explain the general torque-speed characteristics of switched reluctance motor with special consideration on the type of control strategy used for different regions of the curve. | CO3 | 20 |
| (OR) | | | | |
| 8. |  | Originate the emf and torque equations of permanent magnet synchronous motor. | CO3 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the principle of operation of Linear Induction motor with neat sketch in detail. | CO3 | 10 |
|  | b. | Derive an expression of Goodness factor in terms of magnetizing reactance and secondary resistance in linear induction motor. | CO3 | 10 |

ALL THE BEST