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 :** | **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. | With neat diagram explain the stepping sequence of half and full stepping modes of stepper motor in detail. | CO2 | **15** |
| b. | List out the major features of a stepper motor. | CO1 | **5** |
| **(OR)** | | | | |
| 2. | a. | Determined the resolution of a four-phase hybrid stepper motor with a 1.8° step angle if the stepper motor operated: a) full step & b) half step. | CO3 | **10** |
| b. | List out the advantages, disadvantages and applications of stepper motor. | CO1 | **10** |
| 3. | a. | Classify the SRM Converter Topologies. | CO1 | **5** |
| b. | Draw a schematic diagram and explain the operations of a ‘C’ dump Converter used for the control of switched reluctance motor. Also mention the advantages and disadvantages. | CO2 | **15** |
| **(OR)** | | | | |
| 4. | a. | Sketch the basic diagram of SRM drive System. | CO1 | **5** |
| b. | List out the advantages of switched reluctance motor. | CO1 | **5** |
| c. | Briefly explain the operations of a Bifilar winding converter for SRM. | CO2 | **10** |
| 5. | a. | Compare BLDC Motor to an AC Induction Motor. | CO3 | **10** |
| b. | Draw the closed loop controller of PM Brushless DC Motor. | CO3 | **5** |
| c. | List the advantages, disadvantage of BLDC Motor. | CO1 | **5** |
| **(OR)** | | | | |
| 6. | a. | Outline the essential elements of a typical BLDC Motor. | CO1 | **10** |
| b. | Discuss about the Applications and Hall Effect Sensor of BLDC Motor | CO2 | **10** |
| 7. | a. | Explain about the Iron core and Ironless Type Linear Motors in Detail. | CO3 | **15** |
| b. | Compare the Features of three types of Linear Motors. | CO3 | **5** |
| **(OR)** | | | | |
| 8. | a. | Describe the Slotless Type Linear Motor with neat diagram. | CO2 | **10** |
| b. | Give the Benefits and Downsides of Linear Motors. | CO1 | **5** |
| c. | List out the major components of Linear Motor. | CO1 | **5** |
|  | | **Compulsory:** |  |  |
| 9. | a. | Give the key characteristics, advantages and disadvantages of PMSM. | CO2 | **10** |
| b. | Explain the principle of operation and working of PMSM with neat diagrams and waveforms. | CO3 | **10** |

ALL THE BEST