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 – April / May – 2017**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **14EE2019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SPECIAL ELECTRICAL MACHINES** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Describe the operation of half and full stepping modes of stepper motor in detail. | CO2 | 15 |
| b. | Give the major features of a stepper motor. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Find the resolution value of a four-phase hybrid stepper motor with a 1.8° step angle if the stepper motor operated: i) full step & ii) half step. | CO3 | 10 |
| b. | List out the advantages, disadvantages and applications of stepper motor. | CO1 | 10 |
| 3. | a. | Categorize the SRM Converter Topologies. | CO1 | 5 |
| b. | Explain the working of a switched reluctance motor based ‘C’ dump Converter with necessary diagrams. | CO2 | 15 |
| (OR) | | | | |
| 4. | a. | Draw the Switched reluctance motor basic drive system and mentioned its applications. | CO1 | 10 |
| b. | Briefly explain the operations of a Bifilar winding converter for SRM. | CO2 | 10 |
| 5. | a. | Evaluate the strengths and weaknesses of a BLDC Motor with an AC Induction Motor. | CO3 | 10 |
| b. | Sketch the closed loop controller of PM Brushless DC Motor. | CO3 | 5 |
| c. | List the advantages, disadvantage of BLDC Motor. | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | Name 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. | Elucidate the working of 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. | Illustrate the working of Slotless Type Linear Motor with neat diagram. | CO2 | 10 |
| b. | Furnish the major components, benefits and downsides of Linear Motors. | CO1 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | With neat diagrams and waveforms describe the operation and working of PMSM. | CO3 | 10 |
| b. | List out the major characteristics, advantages and disadvantages of PMSM. | CO2 | 10 |