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 :** | **14EE2007** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INDUCTION AND SYNCHRONOUS MACHINES** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Derive the torque equation and the maximum value of a three phase induction motor under running condition. | CO1 | 15 |
| b. | Draw the torque – slip characteristics of three phase induction motor with variation in rotor resistance. | 5 |
| (OR) | | | | |
| 2. |  | Explain the methods of speed control of Induction motor both from stator and rotor side. | CO1 | 20 |
| 3. |  | Explain how a revolving magnetic field is established in a single phase induction motor based on double field revolving theory. Derive the torque equation of a single phase induction motor. | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | Discuss about the Shaded Pole Induction Motor. | CO1 | 14 |
|  | b. | Write the different starting methods of a single phase induction motor. | CO1 | 6 |
| 5. | a. | Describe the construction of a three phase alternator. | CO2 | 12 |
|  | b. | Derive the EMF equation of an alternator | CO2 | 8 |
| (OR) | | | | |
| 6. |  | Explain the methods of synchronizing the alternators in parallel. Derive the synchronizing power and torque of the alternators when connected in parallel. | CO2 | 20 |
| 7. | a. | Explain V curve and Inverted V curve of a synchronous motor. | CO3 | 10 |
|  | b. | Discuss about the methods of starting a synchronous motor. | CO3 | 10 |
| (OR) | | | | |
| 8. |  | For the salient pole synchronous machine, derive the expression of power developed as a function of load angle. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Using slip test, explain how will you determine the d and q axis reactance of a synchronous machine. | CO3 | 20 |

ALL THE BEST