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

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**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 :** | **09EI220 / 12EI202** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **Electrical Machines** | **Max. marks :** | **100** |

#### **Answer ALL questions**

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| **Q. No.** | | **Questions** | | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | | |
| 1. | | What is the function of commutator? | | (1) |
| 2. | | Write down the speed equation of DC motor. | | (1) |
| 3. | | For a single phase transformer, what is the condition for maximum efficiency? | | (1) |
| 4. | | Why the transformer rating is in KVA? | | (1) |
| 5. | | Name the types of Alternator based on their rotor construction. | | (1) |
| 6. | | Mention any two starting methods of synchronous motor. | | (1) |
| 7. | | Define slip. | | (1) |
| 8. | | Why single phase induction motor is not a self-starting one? | | (1) |
| 9. | | Define step angle applicable to stepper motor. | | (1) |
| 10. | | State the applications of Electric Heating. | | (1) |
| **PART B(5 X 3= 15 MARKS)** | | | | |
| 11. | | DC shunt motor is almost a constant speed motor. Justify. | | (3) |
| 12. | | What is an auto transformer? | | (3) |
| 13. | | What are the various methods of starting synchronous motor? | | (3) |
| 14. | | State the disadvantages of Shaded Pole Motor. | | (3) |
| 15. | | Draw and explain the Bow Collector. | | (3) |
| **PART C(5 X 15= 75 MARKS)** | | | | |
| 16. | a. | | Derive the EMF equation of a DC generator. | (7) |
| b. | | A Long Shunt Compound Generator delivers a load current of 50A at 500V, and has  armature, series- field and shunt field resistances of 0.05 Ω, 0.03 Ω and 250 Ω  respectively. Calculate the generated E.M.F and the armature current. Allow 1.0 v per  brush for contact drop. | (8) |
| (OR) | | | | |
| 17. | a. | | Explain in details the construction and operating principle of a D.C motor. | (10) |
| b. | | What is back EMF? Explain the significance of a back EMF. | (5) |
| 18. | a. | | Derive the EMF equation of a transformer and write about the voltage transformation ratio. | (10) |
| b. | | Differentiate core type and shell type of transformer. | (5) |
| (OR) | | | | |
| 19. | a. | | Explain in detail about hysteresis and eddy current losses taking place in transformers. | (8) |
| b. | | Explain in detail about the any two testing methods of transformer. | (7) |
| 20. |  | | Explain the construction and principle of operation of alternator. | (15) |
| (OR) | | | | |
| 21. |  | | Explain the principle of operation and constructional points of an induction motor with  neat sketches. | (15) |
| 22. | a. | | Write short notes on the following:  Shaded-Pole Motor | (8) |
| b. | | Capacitor start induction run motor | (7) |
| (OR) | | | | |
| 23. |  | | With neat diagram and equations explain the various speed control methods  available for three-phase slip ring induction motor. | (15) |
| 24. |  | | Discuss about Electric Traction | (15) |
| (OR) | | | | |
| 25. |  | | Describe the functions of Electric Heating. | (15) |

ALL THE BEST