Code No. : 3028

FACULTY OF ENGINEERING

B.E. 3/4 (E & EE) I Semester (Main) Examination, December 2010

ELECTRICAL MACHINERY – II

Time : 3 Hours] [Max. Marks : 75

*Note : Answer **all** questions from Part-A, answer **any five** questions from Part-B.*

PART – A **(25 Marks)**

1. How do you provide cooling arrangement in transforms ? **3**
2. What is the effect of unequal X/R ratio in the parallel operation of 1-ϕ transformers. ? **2**
3. What do you understand by phase conversion in poly phase transformers ? **2**
4. What are the applications of 3 winding transformers ? **3**
5. What is Rotating Magnetic field theory ? **2**
6. What are various methods of speed control in Induction motors ? **3**
7. What is Magnetic locking in Induction motor ? **2**
8. What do you understand by analysing the circle diagram ? **3**
9. Draw the schematic of a Star/Delta transformer. **3**
10. What is the effect of injecting voltage in the motor circuit of an Induction motor ? **2**

PART – B **(50 Marks)**

11. a) What are the major aspects in the parallel operation of single phase transformers ? **5**

    b) Explain various methods of testing transformers. **5**

12. Two electric furnaces are connected to the secondaries of the Scott-Converted transformer set at a voltage of 80 V, which is supplied from a 3-phase, 6600 V system. The load on the tenser is 480 KW and on the main is 720 KW, both at 0.71 P.F. lag. Calculate the currents in three phase lines. Neglect losses. Also draw the connection diagram for the above problem. **10**

P.T.O.

13. a) Draw a chart showing how the power input to an induction motor is distributed into various components.

    b) Find the efficiency and the %slip if the stator and rotor Cu loss are 3.2 and 2.9 KW respectively. Power input is 95 KW and the stator iron loss is 1.1 KW and mechanical loss is 1.3 KW. **(5+5)**

14. Write short notes on the following :

    a) Induction generator

    b) Double cage induction motor

    c) Power limits of induction motors. **(3+3+4)**

15. Draw the equivalent circuit of an induction motor from fundamentals. How can you obtain the parameters of equivalent circuit from no load and blocked rotor tests ? **10**

16. a) Explain briefly the unbalanced operation of 3-phase transformers. **5**

    b) Explain unbalanced operation and 3-ϕ Induction motors. **5**

17. Write short notes on the following :

    a) Transformer Maintenance

    b) Auto Transformer

    c) Slip/torque characteristics of an induction motor

    d) Cascading in induction motors. **(2.5×4=10 Marks)**