Code No. : **5084**

FACULTY OF ENGINEERING
B.E. 3/4 (E&EE) I Semester (Main) Examination, Dec. 2011/Jan. 2012
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. Describe the procedure for conducting no load test on transformer. **2**
2. Write briefly about different cooling methods of oil immersed transformers. **3**
3. What are the advantages of a transformer bank of three 1 phase transformers over a unit three phase transformer of the same KVA rating ? **3**
4. What are the advantages of $\Delta - \Delta$ transformation ? **2**
5. What is the difference between slip ring and squirrel cage induction motors constructional wise. **2**
6. Why the induction motor draws large currents at starting ? **2**
7. Enumerate the differences between conventional (single cage) induction motor and double cage induction motor. **3**
8. Discuss the advantages of star-delta starter. **2**
9. What is single phasing ? Discuss the effects of single phasing of 3-ϕ induction motors. **3**
10. Write the effects of unbalanced operation of 3-ϕ transformer. **3**

PART – B **(50 Marks)**

11. a) Discuss in detail about the maintenance of transformers. **5**

    b) Discuss briefly about the routine tests conducted on transformer. **5**

12. Two 3 phase transformers, rated at 500 kVA and 450 kVA respectively, are connected in parallel to supply a loud of 1000 kVA at 0.8 legging. The perphase resistance and per phase leakage reactance of the first transformer are 2.5% and 6% respectively and of the second transformer 1.6% and 7% respectively. Calculate the kVA load and power factor at which each transformer operates. **10**

13. a) Derive the expressions for torque, maximum torque and starting torque of 3 phase induction motor. **5**

    b) Draw the phasor diagram of 3 phase induction motor. **5**

14. A squirrel cage induction motor, when started by means of a star delta starter takes 200% of full load current (line) and develops 44% of full load torque at starting. Calculate the starting torque and current, if an auto transformer with 75% tapping were employed. **10**

15. A11/0.4 kV star delta transformer is connected to 3 phase balanced load of 300 kVA at unity p.f. and also to a single phase load of 60 kVA at unity p.f. Calculate the values of the currents on the primary star. The no. load current and the internal leakage impedance drops all neglected. **10**

16. Describe in detail the four phase groups pertaining to 3 phase transformer by drawing phasor diagrams and connection schemes. **10**

17. Write a short notes on : **10**

    a) Induction generator

    b) ON load tap changing transformer.