Code No. : 5334/N

FACULTY OF ENGINEERING
B.E. 2/4 (ECE) I Semester (New) Examination, Dec. 2011/Jan. 2012
ELECTRICAL TECHNOLOGY

Time: 3 Hours] [Max. Marks: 75

Note : *Answer **all** questions of Part A.*
*Answer **five** questions from Part B.*

PART – A **(25 Marks)**

1. What do you understand by armature reaction ? **3**
2. Write the equation for the torque developed in DC motor. **2**
3. Write the relationship for line and phase quantities for both star and delta connections. **2**
4. Define voltage regulation of an alternator. **3**
5. What are various losses in transformer ? **2**
6. Explain the importance of OC and SC tests in transformers. **3**
7. An 8-pole 50 Hz, 3-phase induction motor has a rotor emf frequency of 2Hz. Calculate slip and speed. **3**
8. Explain why single-phase induction motors are not self stunting. **2**
9. What are the advantages of high voltage transmission ? **3**
10. Define regulation and efficiency of a transmission line. **2**

PART – B **(50 Marks)**

11. a) Explain various methods of speed control of a DC series motor. **5**

    b) A 30 kW, 300 V, DC shunt generator has armature and field resistance of 0.05 Ω and 100 Ω respectively. Calculate the total power developed by the armature, when it delivers full load output. **5**

12. a) Explain power measurement by two wattmeter method. **5**

    b) Explain armature reaction in alternator. **5**

13. a) Explain the advantages and disadvantages of auto transformer. **4**

    b) A 10 kVA, 200/400 V, 50 Hz, 1ϕ transformer has the following test results
    OC test – 200 V, 1.3 A, 120 W on LV side

    SC test – 22 V, 30 A, 200 W on HV side.

    Calculate (i) Magnetising and core loss component at 50 Hz and rated voltage.
    (ii) Magnetising branch impedance. (iii) Regulation at full load at 0.8 p.f. leading. **6**

14. a) Describe star/delta starter of a phase induction motor. **5**

    b) Explain the operation of a capacitor start single phase induction motor. **5**

15. Explain with neat diagram operation and construction of nuclear power plant. **10**

16. a) Derive the torque equation of a DC motor. **5**

    b) Various power stages in DC motor and derive condition for the maximum efficiency. **5**

17. Write short notes on the following :

    a) Block schematic of power system. **5**

    b) Slip-torque characteristics of 3-phase induction motor. **5**