

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

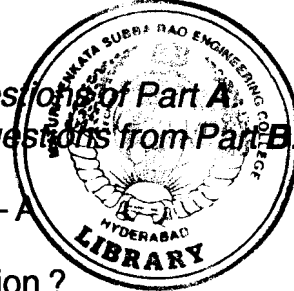
Time: 3 Hours]

[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 starting. 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 0.05Ω and 100Ω 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, 1 ϕ 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**