

CHAPTER – TRANSFORMER AND ELECTRICAL MACHINES

1. Explain working principle of transformer in detail and also derive E.M.F. equation of transformer.
2. What do you mean by an ideal transformer and derive emf equation of a single phase transformer. Also define Transformation Ratio.
3. Explain the various losses taking place in a transformer & Derive the equation for its maximum efficiency. Also define All Day Efficiency.
4. Write & Explain the condition of parallel operation of 3-phase transformer.
5. Describe an auto transformer including its points such as definition, comparison with two winding transformer, saving of copper and its applications.
6. Write advantages and applications of auto transformer.
7. Explain how rotating magnetic field is produced in 3-phase induction motor.
8. What is slip of a 3-phase induction motor? Discuss its slip-torque characteristics.
9. Discuss types of 3-phase induction motor based on rotor construction and explain its working.
10. Explain the working principle of synchronous machine and derive the relation between electrical and mechanical angle.
11. Define and state the expressions for (i) Pitch factor (ii) Distribution factor
12. Explain the Various types of cooling method in rotating machine.
13. Derive equation of emf for an alternator.
14. Give Comparison between Synchronous and Induction Motors.
15. Define salient pole and non-salient pole machines. Why is armature winding of a synchronous machine stationary?
16. State the different types of d.c. generators and state the applications of each type.
17. Explain construction and working principle of d.c machine.

18. Differentiate between self-excited and separately-excited dc machines. Draw the load characteristic of dc shunt and series generator.
19. Explain working principle of d.c. motor. Derive the condition for maximum Power.
20. Draw schematic diagram of a dc machine with labels. State the functions of (i) pole shoe, (ii) commutator and (iii) yoke.