ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : DECEMBER 2009

REGULATIONS : 2007

THIRD SEMESTER : ELECTRONICS AND COMMUNICATION ENGG.

070120020 - ELECTROMECHANICAL ENERGY CONVERSION

TIME : 3 Hours Max.Marks : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Write the EMF equation of a Dc generator.
2. Compare the load characteristics of various Dc generators by plotting a graph.
3. Why do we start DC series motor with load?
4. What is the need for starters?
5. Define transformation ratio.
6. Why transformer is rated in KVA?
7. What are the various types of three phase transformer connections?
8. Give the advantages of three phase transformer.
9. A 4 pole, 3 phase induction motor operates from a supply of frequency 50 Hz. Calculate the speed at which the magnetic field of the stator is rotating.
10. Compare slip ring and squirrel cage Induction motors.
11. What is cogging and crawling?
12. Why slots on the rotor of squirrel cage induction motor are skewed?
13. Why synchronous motor is not a self starting motor?
14. Define voltage regulation of alternators.
15. What is the difference between an induction motor and synchronous motor?
16. Draw the V and inverted V curves of a synchronous motor.
17. What is meant by hunting in a synchronous motor?
18. Define synchronous reactance.

19. Name two main features of hysteresis motor.
20. Mention two applications of universal motors.

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Explain the constructional details of a DC machine with neat sketch.

22. a Derive the EMF equation of a DC generator. 6
    b Explain the speed control methods of DC series Motor. 6

23. a Derive the EMF equation of a transformer. 4
    b Explain the constructional features of a transformer. 8

24. Explain the principle of operation and construction of 3 phase Induction motor.

25. Explain the different speed control methods of squirrel cage induction motor.

26. Discuss EMF and MMF methods of calculating voltage regulation of an alternator. 6+6

27. Explain the methods of starting synchronous motor.

28. a Explain the construction and principle of working of stepper motor. 4
    b Write a brief note on: 4+4
    i) Hysteresis motor.
    ii) Universal motor

*****THE END*****