SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E - EEE
Title of the paper: Special Electrical Machines
Semester: V | Max. Marks: 80
Sub.Code: 214507 | Time: 3 Hours
Date: 27-04-2007 | Session: AN

PART – A (10 x 2 = 20)

Answer ALL the Questions

1. How can a Reluctance motor run at synchronous speed?
2. What is a Vernier motor?
3. For an application, a three-phase Stepper motor must be capable of stepping into 10º increments. How many poles must it have?
4. What is the optimal spacing between phases for a Reluctance type stepper motor? Why?
5. Explain about the power controllers of Switched reluctance motor.
6. Write the torque equation of Switched reluctance motor and comment on it.
7. What are the advantages and disadvantages of Brushless d.c motors compared to ordinary brush d.c. motor?
8. Give the applications of Permanent magnet brushless d.c. motors.
9. Explain reactance in a Permanent magnet synchronous motor.
10. Draw the torque-speed characteristics of a Permanent magnet synchronous motor.

PART – B (5 x 12 = 60)

Answer ALL the Questions

11. What is a Synchronous reluctance motor? Explain with the aid of a neat sketch the construction details, principle of operation, working and applications of it.

(or)

12. (a) Explain the types of Synchronous motors.
    (b) Draw the complete phasor diagram of Synchronous reluctance motor under normal operating conditions and under maximum power condition.

13. Write short notes on
    (i) Basic stepper motors (ii) Variable reluctance stepper motors

(or)

14. Write short notes on
    (i) Permanent magnet stepper motors
    (ii) Hybrid stepper motors

15. Explain briefly about Switched reluctance motors, with the aid diagrams.

(or)

16. Write short notes on
    (i) Microprocessor based control of Switched reluctance motors.
    (ii) Computer control of switched brushless d.c. motors

17. Explain with diagrams about Permanent magnet brushless d.c. motors.

(or)

18. Derive the emf and torque equations of Permanent magnet brushless d.c. motor.

19. Explain about Permanent magnet synchronous motor in detail.

(or)

20. Draw and explain the phasor diagram of Permanent magnet synchronous motor.