Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 11260

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2014.

Eighth Semester

Electrical and Electronics Engineering

080280083 — SPECIAL ELECTRICAL MACHINES

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different types of PMSM?

2. What is meant by self control?

3. What are the differences between mechanical and electrical commutators?

4. What are the applications of PMBLDC motor?

5. Compare synchronous reluctance motor and induction motor.

6. Draw the speed torque characteristics of synchronous reluctance motor.

7. Write the torque equation of SRM.

8. What are the types of power controllers used for switched reluctance motor?

9. What is the step angle of a four phase stepper motor with 12 stator teeth and 3 rotor teeth?

10. Give the types of driver circuits.

PART B — (5 × 16 = 80 marks)

11. (a) With necessary phasor diagram, describe torque speed characteristics of PMSM.

Or

(b) Explain the microprocessor based control of PMSM.

12. (a) Derive the expression for the emf and torque of a PMBLDC motor.

Or

(b) Sketch the structure of controller for PMBLDC motor and explain the functions of Various blocks.

13. (a) Explain the principle of operation and constructional features of synchronous reluctance motor.

Or

(b) Explain in detail the construction and principle of operation of vernier motor.

14. (a) Explain the construction and working principle of SRM.

Or

(b) Explain in detail about computer control of SRM.

15. (a) Explain the construction and various modes of excitation of PM stepper motor.

Or

(b) Explain the mechanism of torque production in VR stepper motor.

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