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**Question Paper Code: 37033**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Seventh Semester

Electrical and Electronics Engineering

01UEE703 - SPECIAL ELECTRICAL MACHINES

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the primary design considerations of synchronous reluctance motor?
2. What is saliency ratio of Synchronous Reluctance Motors?
3. Define slewing in stepper motor.
4. How will you define Step angle?
5. What are the types of power controllers used for switched reluctance motor?
6. State about aligned and unaligned inductance and its effect in SRM.
7. Why the PMSM motor is called electronically commutated motor?
8. What are the applications of BLDC Motors?
9. What is meant by synchronous reactance?
10. Why PMSM operating in self-controlled mode is known as commutatorless dc motor?

PART - B (5 x 16 = 80 Marks)

11. (a) Describe the axial and radial type rotor of synchronous reluctance motor. (16)

Or

(b) Explain the constructions and working principle of synchronous reluctance motor and derive the torque equation. (16)

12. (a) Enlighten the various modes of excitation of VR stepping motor with excitation table. (16)

Or

(b) Explain the construction and various modes of excitation of PM stepper motor. (16)

13. (a) Explicate the constructional feature and principle of operation of switched reluctance motor. (16)

Or

(b) Derive the expression for frequency of variation of inductance of switched reluctance motor. (16)

14. (a) Explain construction and working principle of PMBLDC motor. (16)

Or

(b) Derive the Torque and EMF equations of the permanent magnet brushless DC Motor. (16)

15. (a) Explain in detail, about microprocessor based control of permanent magnet synchronous motor. (16)

Or

(b) Explain microprocessor based control of PM synchronous motor. (16)