

(3 Hours)

Total Marks: 80

- NB:**
- 1) **Question No. 1 is compulsory.**
  - 2) **Answer any THREE questions out of the remaining FIVE questions.**
  - 3) **Assume suitable data if necessary and justify them.**
  - 4) **Figure to the right indicates marks.**

1.
  - a) Explain briefly closed loop control of stepper motor. **5**
  - b) Describe the closed loop control analysis of switched reluctance motor. **5**
  - c) Explain the speed-torque characteristics of the PMBLDC motor. **5**
  - d) Discuss the current control scheme of PMSM in detail. **5**
2.
  - a) Summarize the various applications of stepper motor. **10**
  - b) Describe with a neat circuit any two configuration of power converters used for the control of the switched reluctance motor. **10**
3.
  - a) Explain the closed loop control scheme of a PMBLDC motor drive with a suitable diagram. **10**
  - b) Describe the torque speed characteristics of PMSM with necessary phasor and circle diagram. **10**
4.
  - a) Explain the construction of PMBLDC also compare conventional DC motor and PMBLDC motor. **10**
  - b) With a neat sketch, explain the microprocessor-based speed control of PMSM. **10**
5.
  - a) Differentiate between axial and radial air gap synchronous reluctance motor also compare the performance of synchronous reluctance motor with switched reluctance motor. **10**
  - b) Explain the constructional details of linear induction motor and also specify the applications. **10**
6.
  - a) Describe the constructional details and working of variable reluctance stepper motor. **10**
  - b) Draw and explain four converter topologies for a three phase SRM also write the merits and demerits of each topology. **10**

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