

(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 working of stepper motor stating one application. 5
(b) Describe the closed loop control analysis of brushless DC motor. 5
(c) Draw the power converter circuit of permanent magnet synchronous motor. 5
(d) Explain the current control scheme of switched reluctance motor in detail. 5
 2. (a) Describe in detail the construction and working of variable reluctance stepper motor. 10
(b) With a neat sketch, explain the microprocessor-based speed control of Stepper motor. 10
 3. (a) State and describe the control strategies preferred for switched reluctance motor on the basis of the speed range. 10
(b) Compare any three converter topologies for a three phase switched reluctance motor stating clearly its merits and demerits. 10
 4. (a) Explain the construction of BLDC motor. Also compare conventional DC motor and BLDC motor. 10
(b) With a neat block diagram, explain the microprocessor-based speed control of BLDC motor. 10
 5. (a) With necessary phasor diagram, describe the torque speed characteristics of PMSM. 10
(b) With a neat block diagram, explain the closed loop speed control of PMSM. 10
 6. (a) Write down the principle of operation of a Synchronous Reluctance Motor. 10
(b) Compare the performance of synchronous reluctance motor with switched reluctance motor. 10

.....