

(3 Hours)

[Total Marks :60

- N.B. :** (1) Question No.1 is compulsory
(2) Solve any three out of remaining five questions.
(3) Figure to the right indicates full marks.
(4) Assume suitable data if necessary.

1. Solve any three:-

15

- (a) Draw the block diagram and explain V/F control using converter inverter scheme for 3phase induction motor
- (b) State the application areas of brushless dc motor.
- (c) What is the principle of operation of variable reluctance motor.
- (d) A 230V D.C. motor has an armature circuit resistance 0.8Ω if the full load armature current is 40A and no load armature current is 6 A find the change in back emf from no load to full load
- (e) Which are methods employed to make the single phase induction motor self starting.
2. (a) Explain with neat sketches the armature reaction in dc machine. 7
(b) A 6 pole lap wound shunt motor has 500 conductors, the armature and shunt field resistance are 0.06Ω and 30Ω respectively find the speed of the motor if it takes 110A from a dc supply of 100V. Flux per pole is 30 mwb. 8
3. (a) Draw and explain torque speed characteristic of 3phase induction motor. 8
(b) Explain construction and working principle of 3phase squirrel cage induction motor. 7
4. (a) Explain the double field revolving theory in single phase induction motor. 8
(b) Explain construction, working and control requirements of switched reluctance motor. 7
5. (a) A 800 W, 115V, 60Hz capacitor start motor draws 13.8A from the supply at rated load if the efficiency is 70% and rated speed is 1800 rpm. 8
Calculate (1) Input power at rated load
(2) Power factor at rated load
(3) Rated motor horse power
- (b) State the advantages of brushless dc motor and explain any one brushless dc motor. 7
6. Write a short note on :- 15
(a) Different speed control methods of DC shunt motor
(b) Star-delta starter of 3phase induction motor
(c) Explain in detail permanent magnet synchronous motor