Duration: 3 hrs.   **Total marks: 60**

N.B

1. *Question 1 is compulsory*
2. *Solve any **THREE** out of the remaining 5 questions*
3. *Figures on the right indicate full marks*
4. *Assume suitable data if necessary*

Q1. Solve any **THREE**   **(15)**

a) A 6 pole, 50Hz Induction motor has a full load speed of 950 rpm. Calculate slip.
b) Derive emf equation of a dc motor.
c) State the important applications of brushless DC motor
d) Explain v/f method of speed control of 3 phase induction motor

Q2. a) Develop equivalent circuit of a 3-phase Induction motor.   **(8)**

   b) Explain the working of capacitor start Induction motor.   **(7)**

Q3. a) Describe the construction and working principle of a variable reluctance motor.   **(8)**

   b) With neat diagram, discuss the working of a3 point starter in a dc motor.   **(7)**

Q4. a) Name different types of unipolar brushless DC motor& describe any one type
      in detail   **(8)**
   b) What are the advantages, disadvantages &applications of Switched reluctance
      motors?   **(7)**

Q5. a) Compare 3 phase induction motor with 3 phase synchronous motor.   **(7)**

   b) Describe torque-slip characteristics of a three phase induction motor in 4 modes   **(8)**

Q6. Write short notes on   **(15)**

   a) Auto-transformer Starting of 3 phase induction motor
   b) Permanent magnet synchronous motor
   c)   Double field revolving theory