Advanced Electric Machine[EE604(1)]
Assignment

1.Describe with suitable diagrams the autotransformer starting method of a 3 phase induction motor.

2.Explain the constant V/f method of speed control of a 3 phase induction motor.

3. A 10 kVA, 200/400 V, 50 Hz single phase transformer gave the following test results.
OC test (hv winding open): 200 V, 1.3 A, 120 W
SC test (lv winding short-circuited): 22 V, 30 A, 200 W
Find parameters of the equivalent circuit as referred to lv winding.

4. Derive the condition for maximum torque for a 3 phase induction motor.

5. Prove that if a 3 phase balanced supply is given to a 3 phase winding, a rotating magnetic field will be produced.

6. Explain with suitable diagrams, the armature reaction of a synchronous generator for lagging, leading and upf load.

7. A 6 pole, 50 Hz, 3 phase induction motor has a rotor resistance of 0.25 Ω per phase and a maximum torque of 10 Nm at 875 rpm.Calculate i) the torque when the slip is 5 %, and ii) the resistance to be added to the rotor circuit to obtain 60 % of the maximum torque at starting.

8. Derive the expression of pitch factor and distribution factor.