EE2200: Electrical Machines
March 2022 - Quiz-1

Name: Roll no: Code : SVNFXPGXQG

1 Induction Motors

1. A 3-phase, 200 V, 40 Hz, 8 pole induction motor runs at 576 rpm at full load. Calculate the full load slip of the motor.
   A. -0.040
   B. 0.040
   C. 0.042
   D. 0.060

2. A 3 ϕ induction motor is wound for 8 poles and is supplied from 45 Hz system. Calculate the synchronous speed in rpm.
   A. 675
   B. 1350
   C. 338
   D. 685

3. The power input to the rotor of a 3-phase, 40 Hz, 4 pole induction motor is 16.5 kW, the rotor copper losses are 275.0 **W per phase**. Calculate the speed of rotor in rpm, ignoring the mechanical losses.
   A. 60.0
   B. 1083.0
   C. 1200.0
   D. 1140.0

4. A 3-phase, 45 Hz, 8 Pole induction motor has a rotor impedance of (0.05 + j0.16) ohm at stand still. If the full load torque is obtained at 641.25 rpm, Calculate the ratio of starting torque to full load torque
   A. 1.805
   B. 1.845
   C. 1.825
   D. 0.912

5. A 746 kW, 3 phase, 40 Hz, 8 pole induction motor has rotor resistance and reactance at stand still of 0.09 Ω and 0.32 Ω per phase. The full load torque is obtained at 558.0. Find the ratio of maximum torque to full load torque.
   A. 2.153
   B. 2.133
   C. 1.067
   D. 2.113

6. In a 3-phase, 55 Hz, 6 Pole induction motor, the rotor electromotive force is observed to make 4.95 complete alterations per second. Find the ratio of rotor copper loss to the mechanical power developed in the rotor. Calculate upto 4 decimal places.
   A. 0.1978
   B. 0.3293
   C. 0.1098
   D. 0.0989

7. A 3-phase, 220 V, 50 Hz induction motor runs has a synchronous speed of 1500.0 rpm. Calculate number of poles of the motor.
   A. 4
   B. 8
   C. 5
   D. 2

8. A 3-phase, 220 V, 65 Hz, 4 pole induction motor has a full load slip of 0.04 %. Calculate the rotor speed of the motor in rpm.
   A. 75
   B. 1797
   C. 78
   D. 1872

9. A 3-phase, 8 pole, 230V, 40 Hz induction motor has a full load slip of 11 %. Calculate the frequency of emf induced in the rotor at full load in Hz.

    A. 35.60
    B. 80.00
    C. 4.40
    D. 20.00

10. A 3-phase, 640 kW, 65 Hz, 6 Pole induction motor has a rotor impedance (0.011 + j0.05) ohm at standstill. Calculate the rotor resistance in Ω to be added to get maximum starting torque.

    A. 0.117
    B. 0.061
    C. 0.183
    D. 0.039

* * * All the Best * * *