

Time: 3 Hours

Total Marks: 80

Note-

- Question No. 1 is compulsory
- Attempt any 3 question remaining five
- Assume Suitable Data If Required

Q1. Attempt any four each question Carry Equal Marks

(20)

- Explain the need of parallel operation of transformer and write the necessary condition for parallel operation of 3 phase transformer
- Explain Double revolving field theory.
- Draw and Explain connection and phasor diagram of Dy 11 and Yy6.
- Explain Cogging And Crawling Phenomenon In 3 Phase Induction Motor.
- Explain similarity between three phase transformers and induction Why induction motor is called generalized transformer

Q2. a) Explain Oscillating neutral phenomenon in three phase transformers. Remedies to overcome this phenomenon

(10)

b) A 500-kVA transformer with 0.012 PU resistance and 0.06PU reactance, is connected in parallel with a 250-kVA transformer with 0.014 PU resistance and 0.045 PU reactance to share a load of 600 kVA at 0.8 power factor lagging. Find the KVA and power factor shared by each transformer. Do write the necessary formula utilized to solve the numerical

(10)

Q3.a) Draw and explain working of star-delta starter for three phase induction motor also derive expression for starting current and starting torque.

(10)

b) A 3 phase star connected 400V, 50 Hz, 4 pole induction motor has the following per phase constant referred to stator $R_1 = 0.15$, $X_1 = 0.45$, $R_2 = 0.12$, $X_2 = 0.45$, $X_m = 28.5$ Fixed losses (core and friction and windage losses) = 400w. Calculate stator current, rotor speed, output torque and efficiency when motor is operated at rated voltage and frequency at a slip of 4%.

Q4.a) Discuss V/F speed control method of three phase induction motor

(10)

b). Draw and Write all the steps and draw circle diagram. Take suitable example to draw circle diagram

(10)

Q5. a) Draw and explain power stage of 3 phase induction motor and derive the equation for output power.

(10)

b) Draw and explain the working of capacitor start capacitor run induction motor along with application.

(10)

Q6. Short notes (attempt any 2)

(20)

- Induction Generator
- Switching in transient phenomenon
- Scott connection