T.E. (Electrical) (Sem-V) (R-2012) (May-2018)

Subject: Electrical Machine-II

Q. P. Code: 40538

Time: 3 hours   Date: 21/05/2018   Marks: 80

Note-

   a) Question N0. 1 is compulsory
   b) Attempt any 3 question remaining five
   c) Assume Suitable Data If Required

Q1. Attempt any four each question Carry Equal Marks   (20)

   a) Explain the need of parallel operation of transformer and write the necessary condition for parallel operation of 3 phase transformer
   b) Draw and Explain connection and phasor diagram of Dy11
   c) Explain Oscillating neutral phenomenon in three phase transformer.
   d) Explain Cogging And Crawling Phenomenon In 3 Phase Induction Motor.
   e) Explain similarity between transformers and induction motor. Why induction motor is called generalized transformer

Q2.a) Explain Switching in transient phenomenon in transformer.   (10)

b) Two 3 phase transformers which have same turn ratio are connected in parallel are supplying a load of 800W at 0.8 PF lagging. Their ratings are as follows: (10)

Transformer	Rating	P.U Resistance	P.U Reactance
A	400KVA	0.02	0.04
B	600KVA	0.01	0.05

Determine the power output and power factor of each transformer on the basis of 1000 KVA

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   (10)
$R1 = 0.15, X1=0.45, R2=0.12 X2=0.45 Xm=28.5$
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%.

Q4a). Explain Double revolving field theory in single phase induction motor draw equivalent circuit diagram of single phase induction motor based on this theory.   (10)

b) Explain the working of capacitor start capacitor run induction motor. Draw its circuit diagram along with torque speed characteristic   (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 speed torque Characteristic for three phase induction motor for variable rotor resistance.   (10)

Q6. Write short note on **any two** each question carry equal marks   (20)
   a) Scott connection of transformer
   b) Double cage induction motor
   c) Induction generator

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