Dec. 2014

Q. 1 (a) Explain connection and phasor diagram of Dy11 and Yy6 transformer. **(5 Marks)**

(b) Explain Crawling of Induction Motor with suitable diagram. **(5 Marks)**

(c) Explain similarity between Transformer and Induction Motor. Why induction machine called generalized transformer ? **(5 Marks)**

(d) Discuss double field revolving theory of single phase IM. **(5 Marks)**

(e) Explain need of parallel operation of transformer and write necessary condition for parallel operation. **(5 Marks)**

Q. 2 (a) What is Switching inrush current ? Explain Switching in phenomena in 3-phase transformer. **(10 Marks)**

(b) A load of 1400 KVA at 0.866 pf lagging is supplied by two 3-phase transformer of 1000 KVA and 500 KVA operating in parallel. The ratio of transformation is same in both 6600/400 delta/star. If the equivalent secondary impedances are (0.001 + j0.003)Ω and

(0.0028 + j0.005)Ω per phase respectively. Calculate power factor and load shared by each transformer. **(10 Marks)**

Q. 3 (a) Explain torque-speed characteristic of three phase induction motor and discuss the effect of Resistance on torque speed characteristic. **(8 Marks)**

(b) A 15 KW, 400V, 4 pole, 50 Hz, 3-phase star connected IM gave following test result :

	Line Voltage	Line Current	Power Input
No-load Test	400V	9A	1310W
Block rotor Test	200V	50A	7100W

Stator and rotor ohmic losses at standstill are assumed equal. Draw circle diagram for induction Motor and Calculate :

(a) Line current power factor, slip, torque, efficiency at full load

(b) Max. Power output and max torque. **(12 Marks)**

Q. 4 (a) Explain need of starter for three phase IM and explain star delta starter in detail with suitable diagram. **(10 Marks)**

(b) Discuss V/F control method of speed control with speed-torque characteristic. **(5 Marks)**

(c) A 3 phase, 6 pole, 50Hz induction motor has a full load speed of 960 rpm with its slip ring short circuited. The motor drive a constant torque load. Its rotor speed reduced to :

(a) 800 rpm and

(b) 400 rpm by inserting external resistance in rotor, compare the rotor ohmic losses at these to reduce speed with that at full load. **(5 Marks)**

Q. 5 (a) Draw equivalent circuit diagram of single phase Induction motor for no load and block rotor test and find its parameters. **(10 Marks)**

(b) Describe the principle of operation of Capacitor start and capacitor run induction motor along with torque speed characteristic. Draw circuit and phasor diagram and state its application. **(10 Marks)**

Q. 6   Write short none on : (any two)

(20 Marks

(a)   Scott connection of three phase transformer.

(b)   Induction Generator.

(c)   Power flow of 3-phase Induction motor.