

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 150901****Date: 11-06-2014****Subject Name: Electrical Machines - II****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw the vector and winding diagram for the following 3-phase transformer connections Dd6, Dy1, Yz1, **07**
- (b) Draw and explain vector diagram and connection diagram of Scott used for converting 3-phase supply into two 1-phase supply using two 1-phase transformer **07**
- Q.2** (a) State and explain the condition for parallel operation of 3-phase transformer. **07**
- (b) Explain the working of on load tap-changer. **07**
- OR**
- (b) 120 KVA , 3-phase, 50 Hz , 6600/400-V transformer is delta connected on H.V. side and star connected on L.V. side. The resistance of HV winding is 4.5 ohm/phase and of LV winding is 0.04 ohm/phase. If its full load efficiency is 95% at 0.85 p.f. (lag) , Calculate
- (i) Iron losses & copper losses at full load.
- (ii) Efficiency of transformer at half load and 0.8 p.f. (lead) **07**
- Q.3** (a) Draw and explain vector diagram, connection diagram and clock representation of Yz11 connection of 3-phase transformer.. **07**
- (b) A 3-phase 6-pole, 50 Hz , 400 V star connected induction motor has following test results. **07**
- No-Load Test:- 400 V, 9 A, 1250 watts.
- Short-circuit Test:- 200 V, 50 A, 6930 watts.
- Determine the power scale using circle diagram
- OR**
- Q.3** (a) Explain how rotating magnetic field is produced in 3-phase induction motor. **07**
- (b) Explain crawling and cogging of an induction motor. **07**
- Q.4** (a) Two transformers are connected in open delta and supply a balance 3-phase load of 240 KW at 400 volt and a power factor of 0.866, determine
- (1) The secondary line current, (2) The KVA load on each transformer, (3) The power delivered by the individual transformers. **07**
- (b) Explain the importance and construction of double cage squirrel cage Induction Motor. **07**
- OR**
- Q.4** (a) Explain the double revolving field theory for a single-phase induction motor. **07**
- (b) Explain different methods of starting 1-phase induction motors. **07**
- Q.5** (a) Write different starters used for 3 phase induction motor and explain any one of them **07**
- (b) Explain construction and working principle of Schrage motor. **07**
- OR**
- Q.5** (a) Explain the construction and working of welding transformer. **07**
- (b) Explain the construction and working principle of universal motor. **07**
