

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V • EXAMINATION – WINTER 2013

Subject Code: 150901

Date: 27-11-2013

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)** Explain Parallel operation of 3-phase transformer. **07**
(b) Explain Principle of operation, construction and application of Induction Generator. **07**
- Q.2(a)** Explain the working of on load tap-changer. **07**
(b) Explain the importance of Circle diagram of Polyphase Induction Motor. **07**
- OR**
- (b)** Explain the new concept of Energy Efficient Motor. **07**
- Q.3(a)** Explain the principle and working of single phase A.C. shaded pole motor. **07**
(b) It is desired to transform 2400 V, 5000 kVA three phase power to 2-phase power at 600 V by Scott-connected transformers. Determine the voltage and current ratings of each transformer. Neglect the transformer no-load currents. **07**
- OR**
- Q.3(a)** Why single phase A.C. motor is not self started? Explain the application of single phase A.C. Motor. **07**
(b) A 20 hp, 400 V, 50 Hz, three phase star connected induction motor has the following test data: **07**
No-load test: 400 V, 9 A, $\cos\Phi = 0.2$
Blocked rotor test: 200 V, 50 A, $\cos\Phi = 0.4$. Determine short circuit current and short circuit input with normal voltage.
- Q.4(a)** Explain the need of starter for AC motor. Draw and Explain the circuit diagram of Direct On-Line Starter for 3-Phase Induction Motor. **07**
(b) Explain the effect of unbalance voltage and variation in frequency on the performance of 3-Phase Induction Motor. **07**
- OR**
- Q.4(a)** Explain terminal marking and nomenclature of Polyphase Transformer. **07**
(b) Explain the importance and construction of double cage squirrel cage Induction Motor. **07**
- Q.5(a)** Explain the construction and working principle of AC series motor. **07**
(b) Explain the double field revolving theory of single phase AC motor. **07**
- OR**
- Q.5(a)** Explain the concept of magnetic levitation. Explain advantages of Linear Induction Motor. **07**
(b) Explain the construction and working of welding transformer. **07**
