

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III • EXAMINATION – WINTER • 2014

Subject Code: 2131005

Date: 30-12-2014

Subject Name: Electrical Machines

Time: 02.30 pm - 05.00 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) Why induction motor is self started? Explain with rotating magnetic field. **07**
(b) What is construction difference between slip-ring and squirrel cage induction motor? **07**
What are the merits of each?
- Q.2** (a) Derive EMF equation of single phase transformer. Which parameters are **07**
responsible for variation in output voltage?
(b) Explain construction difference between core type and shell type transformer. **07**
- OR**
- (b) Explain Scott connection in transformer. **07**
- Q.3** (a) What are the different conditions for parallel operation of two transformers? **07**
(b) Explain open circuit and short circuit test on single phase transformer. **07**
- OR**
- Q.3** (a) Explain working of transformer under NO load condition with the help of vector **07**
diagram.
(b) Explain equivalent circuit of single phase transformer. **07**
- Q.4** (a) What is slip in induction motor? Explain torque/slip characteristics of induction **07**
motor.
(b) Derive equation of starting torque and running torque of induction motor. **07**
- OR**
- Q.4** (a) What pitch factor and distribution factor in alternator? **07**
(b) Explain ZPF method for finding regulation in alternator. **07**
- Q.5** (a) What is need of starter in DC machine? Explain construction and working of three **07**
point starter.
(b) Explain different type of DC generator according to its field winding. **07**
- OR**
- Q.5** (a) What is load factor, diversity factor and plant utilization factor? **07**
(b) Explain three phase four wire and three phase three wire system. Explain merits of **07**
each.
