Date: 07/06/2017

Total Marks: 70

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (OLD) - EXAMINATION - SUMMER 2017

Subject Code: 131701

Seat No.: _____

Subject Name: Electrical Machines

Time: 10:30 AM to 01:00 PM

Instructions:

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

0.1	(8)	Explain the losses of transformer. How the	ese losses are reduce?	07
V.1	(\mathbf{a})	Explain the losses of transformer. How the	ese losses are reduce?	07

- **(b)** Explain different parts of DC machine with neat and clean diagram. 07
- Explain the Swinburne's test of a d.c. machine for finding losses with Q.2 **(a)** 07 necessary diagram.
 - Explain working principle of transformer in detail and also derive E.M.F. 07 **(b)** equation of transformer

OR

- A 4 pole d.c. shunt generator with a shunt field resistance of 100 ohm and an **(b)** 07 armature resistance of 1 ohm has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If a load resistance of 10 ohm is connected across the armature terminals and the generator is driven at 1000 r.p.m. calculate the power absorbed by the load.
- **Q.3** What is voltage regulation? How it can be determined by using Zero power **(a)** 07 factor method in synchronous machine?
 - What is cogging and crawling? Compare slip ring induction motor with **(b)** 07 squirrel cage induction motor

OR

- Why single phase induction motor is not self start? How it is made self start? Q.3 07 **(a)**
 - What is hunting? Why damper winding use to reduce hunting? What are the **(b)** 07 applications of synchronous motor
- **Q.4 (a)** What is armature reaction? What are the methods to improve armature 07 reaction? 07
 - Explain torque-slip characteristic of three phase induction motor. **(b)**

OR

- Explain the double revolving field theory for a single-phase induction motor. 0.4 07 **(a)** Explain construction and working principle of synchronous generator. 07 **(b)**
- Q.5 Explain 3-point starter use to start DC motor. **(a)**
 - **(b)** A 25 KVA transformer has 500 turns on the primary & 50 turns on the 07 secondary winding. The primary is connected to 3000 V, 50 Hz supply. Find the full load primary & secondary currents, the secondary e.m.f. & the maximum flux in the core. Neglect leakage drops & no load primary current

OR

- Explain the equivalent circuit of 1-phase transformer. **Q.5** (a) 07
 - Explain working principle of d.c. generator & also derive e.m.f. equation of **(b)** 07 d.c. generator.

07