Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II EXAMINATION – WINTER 2015

Subject Code: X21101 **Date:22/12/2015**

Subject Name: Electrical Engineering

Time: 02:30pm to 05:00pm **Total Marks: 70**

Instructions:

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

Q.1 (a) Explain the types of d.c. motor with diagram. 7

(b) What is the difference between d.c. generator and motor. 7

Discuss the characteristics of d.c. motors.

Q.2 (a) Explain construction and working principle of 1-phase transformer. 7

(b) Explain open circuit and short circuit tests of 1-phase transformer. 7

What is the importance of these tests.

Q.3 (a) Explain the construction and working principle of 3-phase induction motor. 7

(b) A 4 pole , 3 phase , 50 Hz, star connected induction motor has a full load slip Of 4 %. Calculate full load speed of the motor. Also find rotor frequency. 7

Q.4 (a) What is the slip in induction motor? Explain torque – slip characteristics of 3-phase induction motor. 7

(b) A 250 V d.c. shunt machine has line current of 80 A. It has armature and field resistances of 0.1 Ω and 125 Ω respectively. Calculate power developed in armature when running as (i) Generator and (ii) Motor. 7

Q.5 (a) Explain the methods of speed control of d.c. motors. 7

(b) Explain construction and working of stepper motor.

Q.6 (a) Why 1-phase induction motor is not self starting? How it is made self start? 7

(b) Define voltage regulation of alternator. Explain methods to find voltage regulation of alternator. 7

Q.7 (a) Explain construction and working of d.c. servomotor. 7

(b) Explain construction and working of permanent magnet motor. 7