

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC 2ND Semester Examination – July- 2011

Subject code: X21101

Subject Name: Electrical Engineering

Date: 13/07/2011

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 construction and working of D.C. generator. **07**
(b) Explain necessity of starter for D.C. motor. Discuss three point starter with appropriate diagram. **07**
- Q.2** (a) Explain equivalent circuit of single phase transformer with neat diagrams. **07**
(b) Explain different methods for speed control of D.C. shunt motor. **07**
- OR**
- (b) A 4-pole, long-shunt lap wound generator supplies 25 kW at a terminal voltage of 500 V. The armature resistance is 0.03Ω , series field resistance is 0.04Ω and shunt field resistance is 200Ω . The brush drop may be taken as 1.0 V. Determine the e.m.f. generated. Also calculate the No. of conductors if the speed is 1200 r.p.m. and flux per pole is 0.02 Weber. Neglect armature reaction. **07**
- Q.3** (a) Explain construction and working of Schrage motor. **07**
(b) Discuss open circuit and short circuit test on a single phase transformer. **07**
- OR**
- Q.3** (a) A 25 kVA transformer has 500 turns on the primary and 50 turns on the secondary winding. The primary is connected to 3000 V, 50 Hz supply. Find the full load primary and secondary currents, the secondary e.m.f. and the maximum flux in the core. Neglect leakage drops and no-load primary current. **07**
(b) Discuss the No load and load characteristics of separately excited D.C. generator. **07**
- Q.4** (a) State different methods for finding voltage regulation of alternator. Explain in brief any one of them. **07**
(b) Explain construction and working of Universal motor. **07**
- OR**
- Q.4** (a) State different application and types of Servomotor. **07**
(b) Explain double field revolving theory. **07**
- Q.5** (a) Give the difference between Synchronous motor and Induction motor. **07**
(b) Explain construction and working of permanent magnet stepper motor. **07**
- OR**
- Q.5** (a) Explain general principal of Induction motor. Also explain main parts of the Induction motor. **07**
(b) Explain with neat diagram torque speed characteristic of D.C. shunt motor. **07**
