

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-II Examination May 2012

Subject code: X21101

Subject Name: Electrical Engineering

Date: 23/05/2012

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) Describe the construction of single phase transformer. 07
Derive the e.m.f equation of single phase transformer.
- (b) Discuss open circuit and short circuit test on a single phase transformer. 07
- Q.2** (a) Explain necessity of starter for D.C. motor. Discuss three point starter with appropriate diagram. 07
- (b) Explain different methods for speed control of D.C. shunt motor. 07
- OR**
- (b) Describe different parts of a D.C. machine; their material and functions with the help of a neat diagram. 07
- Q.3** (a) Explain working principle of 3 phase induction motor. Also give comparison between squirrel cage and slip ring induction motor. 07
- (b) A 3 phase induction motor is wound for 4 poles and is supplied from a 50 Hz supply. Calculate the synchronous speed, rotor frequency and also the speed of the motor when the slip is 3%. 07
- OR**
- Q.3** (a) Why single phase induction motor is not self starting? Explain any one method to make it self starting. 07
- (b) What is slip of 3 phase induction motor? Discuss its torque slip characteristics. 07
- Q.4** (a) State various advantages of stationary armature in an alternator. Also differentiate between salient pole and cylindrical rotor type synchronous machine. 07
- (b) Define voltage regulation of an alternator. Also explain any one method to find out voltage regulation of an alternator. 07
- OR**
- Q.4** (a) Explain in brief construction and working principle of universal motor 07
- (b) Explain in brief construction and working principle of Schrage motor. 07
- Q.5** (a) Explain the working principle and construction of synchronous motor. Also explain its applications. 07
- (b) Explain different operating conditions for a synchronous motor. 07
- OR**
- Q.5** (a) Explain working principle and construction and applications of A.C.series motor. 07
- (b) Explain comparison between 3 phase induction motor with 3 phase synchronous motor. 07
