Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**PDDC - SEMESTER–II • EXAMINATION – SUMMER 2013**

**Subject Code: X21101** **Date: 06-06-2013**

**Subject Name: Electrical Engineering**

**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)** | Explain the functions of various components of D.C Generator. | **07** |
| | **(b)** | What is requirement of Starter? Explain working of three point starter. | **07** |
| **Q.2** | **(a)** | Explain power stages of three phase induction motor. | **07** |
| | **(b)** | Explain why single phase induction motors are not self starting? How it becomes self starting? | **07** |
| | | **OR** | |
| | **(b)** | Explain capacitor start capacitor run single phase induction motor. | **07** |
| **Q.3** | **(a)** | Draw and explain the vector diagrams when the single phase transformer in on ON- Load condition. | **07** |
| | **(b)** | A 4-pole , 500 V shunt motor has 720 wave connected conductors in the armature. The field resistance is 250 Ω and line current is 40 A. The flux per pole is 0.03 Wb. The armature resistance is 0.2 Ω and the contact drop is 1 V per brush. Calculate the full load speed of the motor. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain working principle of single phase transformer. Also derive emf equation. | **07** |
| | **(b)** | Explain Torque–Slip characteristics of three phase induction motor. | **07** |
| **Q.4** | **(a)** | State different methods for finding voltage regulation of alternator. Explain in brief any one of them. | **07** |
| | **(b)** | Give the difference between and working of permanent magnet stepper motor. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain double field revolving theory. | **07** |
| | **(b)** | Explain construction and working of Schrage motor. | **07** |
| **Q.5** | **(a)** | Explain in brief construction and working principle of universal motor. | **07** |
| | **(b)** | Explain the operating principle of synchronous motor. Draw the vector diagrams when the synchronous motor | **07** |

runs at under excitation an over excitation.

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Explain the difference between cylindrical and salient pole rotors used in large alternator. Define (1) pitch factor (2) Distribution factor (3) Form factor. | **07** |
| | **(b)** | Explain equivalent circuit of single phase transformer. | **07** |

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