

GUJARAT TECHNOLOGICAL UNIVERSITY**PDDC - SEMESTER- VI • EXAMINATION – Winter 2016****Subject Code: X60901****Date: 25.10.2016****Subject Name: Electrical Machine – III****Time: 10.30 am to 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 brake test to find efficiency of DC machines. **07**
 (b) Why the net starting torque of a synchronous motor is zero? Explain any one method to start a synchronous motor. **07**

- Q.2** (a) What is synchronization of alternator? Enlist the methods of synchronization. Explain any one of them in detail. **07**
 (b) Draw the vector diagrams and explain the effect of variation in excitation of synchronous motor connected to infinite bus bar on no load. **07**

OR

- (b) Draw the circuit diagram and explain the retardation test. **07**

- Q.3** (a) Describe the Hopkinson's test to find efficiency of DC machines. **07**
 (b) Write a short note on auto synchronous motor. **07**

OR

- Q.3** (a) Explain the construction and working of a PMSM type motor. **07**
 (b) What do you mean by SCR (short circuit ratio) of a synchronous machine? What is its significance? **07**

- Q.4** (a) Describe the armature reaction effect in case of synchronous generator with different load power factor. **07**
 (b) Draw necessary circuit diagram and explain the slip test for salient pole synchronous machine. **07**

OR

- Q.4** (a) Briefly describe ZPF method to find voltage regulation of alternator. **07**
 (b) Describe the construction and working of an inverted induction machine. **07**

- Q.5** (a) Explain the construction and working of axial flux machines. **07**
 (b) Briefly describe the conditions for satisfactory parallel operation of two alternators. **07**

OR

- Q.5** (a) Describe the method to obtain v-curves of a synchronous motor. **07**
 (b) What do you mean by hunting in a synchronous machine? Explain the method to prevent hunting. **07**