

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(OLD) – EXAMINATION – SUMMER 2019****Subject Code:160901****Date:27/05/2019****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 Hopkinson's test to find efficiency of DC machines. **07**  
(b) Define distribution factor and derive its equation. **07**
- Q.2** (a) Explain V and inverted V curve of synchronous motor. **07**  
(b) Explain field's test for finding the efficiency of DC series machine. **07**
- OR**
- (b) Define pitch factor and derive its equation. Also give its advantage and disadvantage. **07**
- Q.3** (a) State the condition of synchronizing of an alternator with bus bar. Explain one dark and two bright lamp methods with necessary electrical circuit diagram. **07**  
(b) What do you mean by SCR (short circuit ratio) of a synchronous machine? What is its significance? **07**
- OR**
- Q.3** (a) Explain armature reaction and its effects at different power factor in alternator. **07**  
(b) Why synchronous motor is not self-starting? Explain the methods of starting of synchronous motor. **07**
- Q.4** (a) Define voltage regulation of alternator and explain ZPF method. **07**  
(b) Write a short note on auto synchronous motor. **07**
- OR**
- Q.4** (a) Write short note on DC servo motor. **07**  
(b) Explain hunting of synchronous machine and method of its prevention. **07**
- Q.5** (a) Explain the operation of AC servo motor. **07**  
(b) Write a short note on Switched Reluctance Motor. **07**
- OR**
- Q.5** (a) Explain working of PMSM motor with schematic diagram. **07**  
(b) Explain the construction and working of an induction regulator. **07**

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