

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII EXAMINATION – SUMMER 2016****Subject Code:180904****Date:18/05/2016****Subject Name:Electrical Machine Design II****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) Explain the factors affecting the selection of Air gap of three phase Induction Motor **07**
- (b) Explain Design procedure for stator of single phase Induction Motor. **07**
- Q.2** (a) Draw and explain briefly the current distribution wave form spread over one pole pitch in bars and end rings of squirrel cage induction motor. **07**
- (b) Define SCR of a synchronous machine. Discuss the importance of SCR in the design of synchronous machine. **07**
- OR**
- (b) Explain the effect of Harmonic Induction Torque and Harmonic synchronous Torque on the performance of three phases Induction Motor. **07**
- Q.3** (a) Define and explain the term “short circuit ratio” of a synchronous generator and discuss its influences on the machine performance. **07**
- (b) What is the role of damper winding in (i) synchronous generator and (ii) synchronous motor? Derive the equation of MMF of damper winding. **07**
- OR**
- Q.3** (a) Explain methods of Improving starting torque of Induction Motor. **07**
- (b) Explain evaluation of Direct and Quadrature axis reactance of Alternator. **07**
- Q.4** (a) Draw flow chart and write algorithm steps for design of submersible motors. **07**
- (b) Discuss design consideration of High Voltage Machine AND Explain design difference between low speed and high speed machine. **07**
- OR**
- Q.4** (a) Explain factors affecting specific electric loading and specific magnetic loading of alternator. **07**
- (b) On what factor the cooling coefficient ‘c’ depends? Explain how it influence the selection of specific electric load in synchronous machine? **07**
- Q.5** (a) Prove that the out put of single phase machine is two third of that of a three phase machine. **07**
- (b) Explain how you will estimate MMF required for various parts of magnetic circuit of Synchronous Machines. **07**
- OR**
- Q.5** (a) Explain the effect of skewing the rotor slots in a squirrel cage induction motor. **07**
- (b) Derive the equation of capacitance to give maximum starting torque of capacitor start single phase induction motor. **07**

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