

**B.Tech 5th Semester (EE) F-Scheme**

**Examination, December-2017**

**ELECTRICAL MACHINE II**

**Paper-EE-311-F**

*Time allowed : 3 hours*                      *[Maximum marks : 100]*

- Note:** (i) *Q.1 (Section-A) is compulsory*
- (ii) *Attempt four more questions by selecting at least one question from each section (B, C, D & E)*
- (iii) *Use of non programmable scientific calculator is allowed.*

**Section-A**

1. (a) Discuss the condition for maximum torque under running condition of 3- $\phi$  Induction motor.      5
- (b) Discuss the method of reversing the rotation of 1- $\phi$  Induction motor.      5
- (c) Derive the e.m.f. equation of Synchronous Generator.      5
- (d) Discuss the use of damper winding in synchronous motor in brief.      5

**Section-B**

2. Discuss, how revolving field is produced in 3- $\phi$  Induction motor?      20

3. Discuss and explain the starting methods of 3- $\phi$  Induction motors in detail. 20

**Section-C**

4. Draw and explain the equivalent circuit of single phase Induction motor with and without core loss. 20
5. Discuss and explain various starting methods of 1- $\phi$  Induction motor. 20

**Section-D**

6. Define Pitch factor and Distribution factor. Find no load phase and line voltage of a star connected, 3- $\phi$ , 6-pole alternator which runs at 1200rpm, having flux per pole of 0.1 wb sinusoidally distributed. Its stator has 54 slots having double layer winding. Each coil has 8 turns and coil is chorded by 1 slot.
7. What do you mean by voltage regulation of synchronous Gen. Explain Synchronous Impedance method in detail. 20

**Section-E**

8. Draw and explain V curves for synchronous motors. 20
9. A 3- $\phi$  star connected synchronous motor takes 48 kw at 693V, the power factor being 0.8 lagging. The induced e.m.f is increased by 30%, the power taken remaining the same. Find current and power factor. The machine has synchronous reactance of 2W per phase and resistance negligible.