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Total No. of Questions : 09

B.Tech. (EE/EEE) (Sem.–6th)

SYNCHRONOUS MACHINES

Subject Code : EE-302

Paper ID : [A0419]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. **Answer briefly :**

   i. Why a synchronous motor runs only at synchronous speed?

   ii. Define pitch factor and distribution factor.

   iii. What are pull in and pull out torques?

   iv. What do you understand by synchronization to infinite bus bar?

   v. How the power factor of a synchronous motor can be controlled?

   vi. Why rotating field system is used in synchronous machines?

   vii. What is the purpose of damper winding?

   viii. Define synchronous reactance.

   ix. Why the core of the motor is made up of thin stampings?

   x. What is Hunting in synchronous machines?

SECTION-B

2. Differentiate between different rotor construction with neat sketch of each.
3. Discuss the two reaction theory of salient po phasor diagram.
4. What are essential conditions of parallel operati
5. A 3300 V delta connected motor has synchro (delta) of 18 Ω. It operates at a leading pov drawing 800 kW from the mains. Calculate its e
6. Draw the power angle characteristic and get th power in a synchronous machine.

SECTION-C

7. Explain various starting methods for a synchron
8. What is short circuit ratio? Explain the metho circuit ratio of a synchronous machine using its
9. Write short notes on any two of the following :

   a) Armature reaction and its minimization

   b) V-curves and inverted V-curves

   c) Reluctance Motor