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Roll No.

Total No. of Pages: 2

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 :

- 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.
- SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

### SECTION-A

### l. Answer briefly:

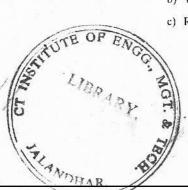
- i. Why a synchronous motor runs only at synchronous speed?
- ii. Define pitch factor and distribution factor.
- iii. What are pull in and pull out torques?
- iv. What do you understand by synchronization to infinite bus bar?
- v. How the power factor of a synchronous motor can be controlled?
- vi. 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

- Differentiate between different rotor construction with neat sketch of each.
- Discuss the two reaction theory of salient po phasor diagram.
- 4. What are essential conditions of parallel operations
- 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
- Draw the power angle characteristic and get the power in a synchronous machine.

#### SECTION-C

- 7. Explain various starting methods for a synchronic
- What is short circuit ratio? Explain the methodireuit 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



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