

Roll No.

24320

B. Tech. (EEE) 6th Semester (Re-appear)

Examination – October, 2020

COMPUTER ADDED ELECTRIC MACHINES

Paper : EE-314-F

Time : 1.45 Hours] [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *three* questions. All questions carry equal marks.

1. (a) What is the use of heat sinks in electrical machines ?
- (b) What is magnetic loading ?
- ~~(c)~~ Compare leakage flux and leakage reactance.
- ~~(d)~~ Explain the working principle of induction motor.
- ~~(e)~~ What do you mean by term optimization ?

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2. (a) Discuss the causes of insulation failure in electrical machine.
- (b) Explain different type of enclosure for electric machines.
3. Initial temp of transformer is 27°C. After two hours of operation at full load it is 57°C and after four hours run it is 72°C. Estimate the following :
 - (a) Heating time constant.
 - (b) Maximum final peak value of temp at full load.
 - (c) Time is which transformer reach 5/6th of its final value.
4. (a) Explain real and apparent flux densities.
- (b) Drive the expression for a specific permanence of a magnetic circuit in electrical machine. Define leakage permeance.
5. Deduce an expression for the mmf required for the air gap of an armature with slots and ducts.
6. (a) Explain the basics designing aspects of rotating electrical machines.
- (b) Discuss designing aspects of synchronous machines.

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7. Determine for a 12.5 MVA, 6.6 KV 20 pole 50 Hz. 3 phase alternator suitable values for diameter at air gap, length of core, number of stator slats and stator conductors. Assume appropriate value for the missing design constants.
8. (a) Discuss the philosophy of computer aided design of electrical machines, mentioning the advantage and limitation in design.
- (b) Discuss concept of optimization in designing of electrical machines.
9. (a) Give flow chart of designing a transformer by synthesis method.
- (b) Give a general procedure for optimization of design of electrical machines.
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