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B. Tech. EXAMINATION, May 2017

(Sixth Semester)

(Old Scheme) (Re-appear Only)

(EE, EEE)

EE-314

CONVENTIONAL AND CAD OF ELECTRIC MACHINES

Time : 3 *Hours*] [*Maximum Marks :* 100

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

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

1. State the design considerations in rotating electrical machines particularly with reference to :

(a) Specification

(b) Materials used in construction

(c) Temperature rise.

You may take the example of any *one* particular rotating electrical machine for discussion. **20**

2. State the advantage of using hydrogen as a cooling medium in turbo alternators. When can it justified compared to air as a cooling medium. **20**

3. (a) Derive the expression for the gap contraction factor for (1) slots (2) ducts in a slotted armature core with ducts. **10**

(b) Discuss at least eight different types of duties of an induction motor. **10**

4. (a) How do you account for the effects of saliency in the design of magnetic circuits ? **10**

(b) What are the essential differences between electrical and magnetic circuits ? **10**

5. (a) Draw the flow chart for analysis the design of synchronous motors. **10**

(b) Discuss at least six points of difference between design of synchonous motors from the design of alternator. **10**

6. (a) Define the term Optimization. **5**

(b) Differentiate between optimized and non-optimized design of power transformer. **15**

7. List the procedural steps for design of induction motor. **20**

8. (a) What is the effects of chording and distribution the winding in slots on the emf generated ? **10**

(b) Draw the cut section of the transformer. Also derive output equation for a single phase transformer. **10**