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BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2016
DAEI—THIRD SEMESTER EXAMINATION

ELECTRICAL MACHINES

Time : 3 hours]　　　　　　　　　　　　　　　[*Total Marks* : 80

PART—A　　　　　　　　3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the working principle of DC generator.

2. Classify DC generators.

3. List the various losses in DC machine.

4. List any three differences between core-type and shell-type transformers.

5. State the EMF equation of a 1- transformer.

6. State the condition for maximum efficiency of an induction motor.

7. List any three applications of an induction motor.

8. Define *(a)* pitch factor and *(ii)* distribution factor of armature winding.

9. List the starting methods of synchronous motor.

10. List any three applications of universal motor.

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PART—B   10×5=50

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Instructions : (1) Answer *any* **five** questions.

                (2) Each question carries **ten** marks.

                (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Derive the equation for EMF of a DC generator.   10

12. Explain the operation of three-point starter with diagram.   10

13. Explain OC and SC tests on a 1- transformer.   5+5

14. *(a)* Derive the condition for maximum efficiency of a 1-transformer.   5+5

    (b) In a 50-kVA transformer, the iron loss is 500 W and full-load copper loss is 800 W. Determine its efficiency at full-load *(i)* at unity power factor and *(ii)* at 0·8 power factor lagging.   5+5

15. Explain the working principle of a 3- induction motor.   10

16. Explain the slip-torque characteristics of induction motor.   10

17. Explain the working principle of an alternator.   10

18. *(a)* Explain the terms *(i)* synchronous impedance and *(ii)* voltage regulation of an alternator.

    (b) Explain the working principle of stepper motor.   5+5

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