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C14–AEI–302

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2017

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. Classify DC generators based on excitation.

2. State the need of starter for DC motors.

3. Write the torque equation of the DC motor.

4. Give the e.m.f. equation of 1- transformer.

5. Draw the *Y*- connection of 3- transformer.

6. Define slip of an induction motor.

7. List the applications of induction motor.

8. Define *(a)* pitch factor and *(b)* distribution factor of the armature winding of an alternator.

9. Mention the methods of starting a synchronous motor.

10. List the applications of repulsion motor.

PART—B

10×5=50

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. *(a)* Derive the e.m.f. equation of a DC generator. 6

(b) A 4-pole, 1200 r.p.m. generator with wave wound armature has 60 slots and 10 conductors per slot. The flux per pole is 0·04 Wb. Calculate the e.m.f. induced in the generator. 4

12. Explain the speed control methods of DC motor.

13. Explain the principle and constructional features of 1- transformer.

14. Explain OC and SC tests on a 1- transformer.

15. Explain the working principle of a three phase induction motor.

16. *(a)* List the various losses of induction motor. 4

(b) Draw the circuit diagrams for capacitor start-capacitor run single-phase induction motor. 6

17. Explain the construction details of an alternator.

18. *(a)* List the applications of synchronous motor. 4

(b) Explain the principle of operation of universal motor. 6

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