



C14-AEI-302

4215

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2018
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 principle of DC generator.
2. Explain the need of starter for DC motors.
3. List the various losses in DC machines.
4. State the e.m.f. equation of 1- transformer.
5. Draw the Y- connection of 3- transformer.
6. List the advantages and disadvantages of three-phase induction motor.
7. State the condition for maximum efficiency of an 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.

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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. lap-wound d.c. generator has 760 conductors if the flux per pole is 0.02 wb, calculate the e.m.f. generated by the generator. 4
- 12.** Explain the working of a 3-point starter with a neat diagram.
- 13.** Explain the principle and constructional features of 1- transformer.
- 14.** (a) Explain the working of autotransformer. 5
(b) A 1- transformer has 600 primary and 1200 secondary turns, the net cross-sectional area of the core is 80 cm². Maximum flux density in the core is 0.976 wb/m². If the primary winding is connected to 50 Hz supply, calculate the primary induced voltage. 5
- 15.** Explain the construction details of squirrel-cage type and wound rotor type induction motors.
- 16.** Explain the working principle of a single-phase induction motor.
- 17.** Explain the construction details of an alternator.
- 18.** (a) List the applications of synchronous motor. 3
(b) Define e.m.f. equation of an alternator. 2
(c) Explain the principle of operation of universal motor. 5

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