



C14-AEI-302

4215

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—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. Write the e.m.f. equation of a DC generator.
2. State the principle of operation of DC motor.
3. List the various losses in DC machines.
4. Define efficiency of a transformer.
5. State the advantages of 3- transformer over 1- transformer.
6. State the relation between rotor frequency and slip.
7. Sketch the wiring diagram of DOL starter used for induction motor.
8. List the applications of synchronous motor.

- * 9. Define voltage regulation of an alternator.
10. List the applications of universal 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) Explain the simple lap and wave windings with necessary diagram. 6
- (b) A 4-pole, 1200 r.p.m. generator with lap wound armature has 720 conductors in 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 legible diagram.
13. Explain the principle of operation of 1- transformer.
14. (a) A 1- 6600 / 230 V, 50 Hz transformer has a core area of 400 cm^2 and a maximum flux density of 1.18 Wb/m^2 . Calculate the number of turns in primary and secondary windings. 6
- (b) State the various losses in a transformer. 4
15. Explain the slip-torque characteristics of an induction motor.
16. Explain the principle of operation of a single phase induction motor.
- * 17. Explain the principle of operation of synchronous motor.
18. (a) Define synchronous impedance of an alternator. 4
- (b) Explain the principle of operation of shaded pole motor. 6
