



C14-EE-502

4634

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DEEE - V SEMESTER EXAMINATION

A. C. MACHINES - II

Time : 3 Hours]

[Total Marks : 80

PART - A

3×10=30

Instructions :

- (1) Answer **ALL** questions.
- (2) Each question carries **THREE** marks.
- (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 Explain the phenomenon of Hunting in synchronous motor.
- 2 What is Synchronous Condenser and where is it used ?
- 3 Draw the power stages of three phase induction motor.
- 4 State the need of starter in case of three phase induction motor.
- 5 State the similarities of induction motor with respect to Transformer.
- 6 Explain how the direction of the rotation of split phase induction motor can be reversed.
- 7 List any three applications of single phase shaded pole induction motor.
- 8 List the different types of single phase induction motors.
- 9 Mention the advantages of Brushless DC motor.
- 10 What are the problems that arise when DC series motor is connected across AC supply ?

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[Contd...

PART - B

10×5=50

- Instructions :**
- (1) Answer any **FIVE** questions.
 - (2) Each question carries **TEN** marks.
 - (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11 Explain why synchronous motor is not self starting and explain the procedure to start a synchronous motor.
- 12 (i) What is the effect of change in excitation in synchronous motor on armature current and power factor at constant load.
(ii) Explain the starting of synchronous motor by damper winding.
- 13 Explain the construction and working of double cage induction motor.
- 14 (i) Draw the equivalent circuit diagram of three phase induction motor.
(ii) Derive the relationship among rotor input, rotor copper losses and mechanical power developed in case of three phase induction motor.
- 15 A three phase 440V, 50Hz 4 pole star connected induction motor has rotor resistance of $0.1\ \Omega$ and reactance of $0.9\ \Omega$ per phase. The ratio of stator to rotor turns is 4. Calculate (i) the total rotor copper loss (ii) the gross output at a slip of 4% (iii) the maximum torque and the corresponding slip.
- 16 Draw the circle diagram of a 20 HP, 400 V, 50 Hz, three phase star connected induction motor from the following test data (line values).
No load : 400 V, 9A, Power factor = 0.2
Blocked rotor : 200 V, 50 A, Power factor = 0.4
From the circle diagram find :
(a) Line current, power factor and efficiency at full load,
(b) Full load slip,
(c) Maximum horse power output.
The stator and rotor copper losses are divided equally in the blocked rotor test.
- 17 Explain the working principle of a single phase induction motor by cross field theory.
- 18 Explain the construction and working principle of Hybrid type Stepper motor.