C09–EE–**603**

3764

BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2016
DEEE—SIXTH SEMESTER EXAMINATION

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

1. Draw the phasor diagram of synchronous motor at—

(a) lagging power-factor;

(b) leading power-factor.

2. Explain the phenomenon of Hunting.

3. State the main parts of synchronous motor.

4. State any three applications of 3- induction motor.

5. Draw the torque-slip curves of induction motor for different values of rotor resistance.

6. An 8-pole, 750 r.p.m. alternator supplies power to a 8-pole, 3-phase induction motor. Find the full-load speed when the slip is 4%.

7. State the method of reversal of rotation of capacitor start motor.

8. State the method of reversal of rotation of shaded pole motor.

9. State any three applications of capacitor start capacitor run induction motor.

10. State any three applications of AC series 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. Explain V and inverted-V curves.

12. State the starting methods of synchronous motor. Explain any one of them in detail.

13. Draw the circle diagram for a 3·73-kW, 200-V, 50-Hz, 4-pole, 3-star connected induction motor from the following test data :

    No. load test : 200 V, 5 A, 350 W

    SC test   : 100 V, 26 A, 1700 W

Estimate from the diagram for full load condition, the line current, power factor and maximum torque in terms of full load torque. The rotor CU loss at stand still is half the total in loss.

14. Explain the operation of Rotor resistance starter with diagram.

15. Explain with neat sketch the speed control methods of 3-induction motor—

(a) by changing the supply frequency;

(b) by cascade connection.

16. A 3-phase, 50 Hz induction motor draws 50 kW from the mains. If the stator losses are 2 kW and the rotor e.m.f. observed to make 100 complete oscillations per minute, determine *(a)* Rotor copper loss and *(b)* mechanical power developed.

17. Explain the speed control methods of *(a)* split-phase motor, *(b)* permanent split-capacitor and *(c)* shaded pole motor.

18. Explain the construction and working principle of Stepper motor with neat diagram.

★ ★ ★