



C16-EE-502

6634

BOARD DIPLOMA EXAMINATION, (C-16)

JANUARY/FEBRUARY—2022

DEEE - FIFTH 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. List any three applications of synchronous motors.
2. Draw the V and inverted V curves of a synchronous motor on no load and full load.
3. State the speed control methods of 3- Φ in suction motors.
4. Compare 3- Φ induction motor with synchronous motor.
5. State any three applications of stepper motors.
6. Draw the circuit diagram of 1- Φ split phase induction motor and label the parts.
7. State any three advantages of electric drives.
8. Compare group drive with individual drive in any three aspects.
9. What is regenerative braking?
10. State different systems of braking of electric motors.

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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 criterion for valuation is the content but not the length of the answer.

- 11.** Explain the effects of varying excitation at constant load with phasor diagram for a synchronous motor.
- 12.** The power input to a 3- Φ induction motor is 38.91kW. The stator losses total 950W and mechanical losses total 1873W. If the slip of the motor is 4.5%, calculate (i) Rotor input (ii) Rotor copper loss (iii) Output power and (iv) Efficiency.
- 13.** A 3- Φ , 50Hz, 4-pole induction motor has a rotor impedance of $(0.03 + j0.2) \Omega$ at standstill. Full load torque is obtained at 1440 rpm. Calculate (i) the ratio of max. to F.L torque (ii) the speed at max. torque (iii) the rotor resistance to be added to get max. Starting torque.
- 14.** (a) Explain the starting method of a synchronous motor by using damper winding.
(b) Draw a neat sketch of 3- Φ star-delta starter and label the parts. 5+5
- 15.** Explain the construction and working of 1- Φ capacitor start induction motor with neat sketch.
- 16.** Explain the working of permanent magnet stepper motor with neat sketches.
- 17.** (a) Compare AC drive and DC drive in any five aspects.
(b) State the types of loads for drives based on the time of operation. 5+5
- 18.** Explain the method of rheostatic braking applied to the following motors :
(a) DC shunt motor
(b) DC series motor

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