

SE sem IV C'scheme. Summer 2025 Examinations
 Date: 15/5/2025
 Total Marks: 80

(3 Hours)

- N.B: (1) Question No. 1 is compulsory.
 (2) Attempt any three from the remaining questions.
 (3) Figures to the right indicate full marks.
 (4) Each question is of 20 Marks.

- Q. 1** Answer any four questions. 20M
- a. List out the conditions for successful parallel operation of two single phase transformers. 5M
- b. Explain the necessity of starter in case of a three phase induction motor? 5M
- c. State and explain the advantages and disadvantages of autotransformer 5M
- d. Describe connection and phasor diagram of yy0 and yd11 transformer. 5M
- e. Why single-phase induction motor is not self-starting. 5M
- Q. 2** Answer following questions. 20M
- a. A 3-phase Induction Motor 50 Hz, 4 pole, having a rating of 18.65 kW has friction and windage losses of 2.5% of the output. The full load slip is 4%. Find for full load (i) the rotor Cu. Loss (ii) the rotor input (iii) the shaft torque (iv) the gross electromagnetic torque. 10M
- b. Discuss various speed controlling methods for 3 phase induction motor. Explain any one in detail. 10M
- Q. 3** Answer following questions. 20M
- a. Discuss the torque-speed characteristics for all operating regions of a three phase induction motor. 10M
- b. Explain working of shaded pole single phase induction motor with the help of phasor diagram, and Also explain the operating characteristics. 10M
- Q. 4** Answer following questions. 20M
- a. Describe the phenomenon of double field revolving theory in single phase induction motor. 10M
- b. Describe harmonics and Suppression of harmonics in three phase transformer. 10M
- Q. 5** Answer following questions. 20M
- a. Write a short note on Oscillating neutral phenomenon. 10M
- b. Explain O.C. and S.C. test of a single phase transformer with equivalent circuit. 10M
- Q. 6** Answer following questions. 20M
- a. A 100 KVA, 2200/440 V transformer has $R_1 = 0.3 \Omega$, $X_1 = 1.1 \Omega$, $R_2 = 0.01 \Omega$, $X_2 = 0.035 \Omega$. Calculate (i) the equivalent impedance of transformer referred to the primary and (ii) total copper losses. 10M
- b. Discuss excitation Phenomenon in transformers. 10M
