

SE Sem IV C-Scheme may JUNE 2026

ELEC

14/05/26

Total Marks: 80

- 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
- Draw and explain the equivalent circuit of a single phase transformer. 5M
 - Explain power flow diagram of 3 – phase induction motor. 5M
 - How much is starting current of 3 – phase induction motor? What is need of starter in case of 3 – phase induction motor. 5M
 - Enlist applications of different types of single phase induction motors. 5M
 - Explain Dy11 connection of 3 – Phase transformer. 5M
- Q. 2** Answer following questions. 20M
- Explain in detail Sumpner test on transformer. 10M
 - Write short note on Scott Connection. 10M
- Q. 3** Answer following questions. 20M
- "Single phase induction motors are not self-starting", justify the statement with the help of double field revolving theory. 10M
 - Explain oscillating neutral phenomenon in 3 – phase transformer 10M
- Q. 4** Answer following questions. 20M
- A 3-phase, 4-pole, 50-Hz induction motor at standstill has 120 V induced across its star-connected terminals. The rotor resistance and standstill reactance per phase are 0.2 and 1.00 respectively. Calculate the speed when the rotor is drawing a current of 16 A at a particular load. Also calculate the speed at which the torque is maximum and the corresponding value of rotor input. 10M
 - Illustrate working of capacitor and resistance split phase single phase induction motors with the help of circuit diagram, phasor diagram, characteristics and applications. 10M
- Q. 5** Answer following questions. 20M
- Two 1-phase transformers with equal turns have impedances of $(0.5 + j13)$ ohms and $(0.6 + j10)$ ohms with respect to the secondary. If they operate in parallel, determine how they will share total load of 100 kw at pf 0.8 lagging. 10M
 - Discuss different pole changing methods of speed control of three phase induction motor. 10M
- Q. 6** Answer following questions. 20M
- Write in detail about different connections and phasor groups of 3 – phase transformer. 10M
 - Compare autotransformer with two winding transformer. Derive expression for copper saving in autotransformer. 10M
