15/05/2025 SE ELECTRICAL SEM-IV C-SCHEME EACM-I QP CODE: 10081120

(3 Hours) **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**
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

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