



**B.Tech IV Semester Regular Examinations, July 2024**

**ELECTRICAL MACHINES – II**  
 (EEE)

**Maximum Marks: 60**

Date: 23.07.2024 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A		CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	What is meant by single layer and double layer winding?	CO1	BTL1
b)	What is the effect of skewing the rotor slots of an induction motor?	CO1	BTL1
c)	Define slip.	CO2	BTL1
d)	Write short note on -.No-load Test.	CO2	BTL1
e)	Why a three phase synchronous motor will always at synchronous speed?	CO3	BTL1
f)	Define short pitch winding.	CO3	BTL1
g)	Briefly discuss about Synchronous Condenser	CO4	BTL1
h)	Write the applications of synchronous motor.	CO4	BTL1
i)	What is Rotating Magnetic Field?	CO5	BTL1
j)	Write short note on Capacitor start – run single phase induction motor.	CO5	BTL1
Part-B			
Answer All the following questions. (5X10M=50Marks)			
2	A. Discuss about production of rotating magnetic field. [5M],	CO1	BTL2
	B. What are the advantages and disadvantages of wound rotor type induction motor? [5M]	CO1	BTL1
OR			
3	a 3 phase, 25 kW, 400 V, 50 hz, 8-pole induction motor has rotor resistance of 0.08 ohm and standstill resistance of 0.4 ohm. The effective stator/ rotor turn ratio is 2.5/1. The motor is to drive a constant-torque load of 250 N-m. Neglect stator impedance. 1) Calculate the minimum resistance to be added in rotor circuit for the motor to start up on load. 2) at what speed would the motor run, if the added rotor resistance is (a) left in the circuit, and (B) subsequently short circuited. [10M]	CO1	BTL4
4	A. Sketch and explain the torque slip characteristics of the 3-phase cage and slip-ring induction motors. [5M]	CO2	BTL2

	B. Explain the phenomenon of crawling on 3-phase induction motor. [5M]	CO2	BTL2
	OR		
5	A. Derive the torque equation of an induction motor and derive the condition for maximum torque. [5M]	CO2	BTL3
	B. Explain the phenomenon of crawling and cogging. [5M]	CO2	BTL2
6	Determine $X_d$ and $X_q$ through slip test with neat diagram. [10M]	CO3	BTL2
	OR		
7	A. Demonstrate the phasor diagrams of three phase synchronous motor for lagging, leading and unity power factor condition. [5M]	CO3	BTL4
	B. State advantages of short pitch winding over full pitch winding in alternators. [5M]	CO3	BTL1
8	A. Explain the effect of variable excitation on the behavior of synchronous motor under constant load condition. [5M]	CO4	BTL2
	B. Discuss the disadvantages of low power factor and explain the use of synchronous condenser in power factor improvement. [5M]	CO4	BTL2
	OR		
9	Explain the necessary conditions for parallel operation with neat diagram. [10M]	CO4	BTL4
10	A. Summarize double revolving theory as applied to a single-phase induction motor and prove that it cannot produce any starting torque. [5M]	CO5	BTL3
	B. Explain working of resistance split phase single phase induction motor with vector diagram. [5M]	CO5	BTL2
	OR		
11	Explain the constructional features and principle of operation of a single-phase induction motor. [10M]	CO5	BTL2