Total No. of Questions: 22 Total No. of Pages: 2

Roll No. _____

B.Tech IV sem (Main/Back) Exam April-May 2026
Electrical & Electronics Engg.
4EX4-05 Electrical Machine - II
Paper Code : 4E1321
EE, EX

Time: 3 Hours **Maximum Marks: 70**

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. _____ 2. _____

Part A (Answer should be given up to 25 words only)

T-422

All questions are compulsory

Q.1 What is meant by slip in an induction motor ?

Q.2 The frequency of the emf in the stator of a 4 pole induction is 50Hz and the rotor is 1.5 Hz. What is the slip ?

Q.3 What is cogging in 3- phase induction motor ?

Q.4 Why single phase induction motor do not have a starting torque ?

Q.5 What are the main disadvantage of a single phase induction motor when compared with three phase induction motor ?

Q.6 Write important function of damper windings.

Q.7 What is hunting of synchronous machine ?

Q.8 Discuss full pitch coils.

Q.9 What do you understand by distributed winding ?

Q.10 What do you understand by revolving magnetic field ?

10x2=20

Part B (Analytical/Problem solving questions)

T-422

Attempt any Five questions

Q.1 Explain the principle of operation of a 3-phase induction motor.

Q.2 The power input to a 3 phase induction motor is 60 kw. The stator loses total 1 kw. Find the total mechanical power developed and the rotor copper loss per phase if the motor is running with a slip of 3%

Q.3 Describe the construction and working of capacitor start single phase induction motor.

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Paper Code
4E1321

Q.4. What are V-curves and inverted V-curves of a 3-phase synchronous motor.

Q.5 Explain the principle of operation of 3-phase synchronous motor.

Q.6 Discuss Air-gap MMF distribution with fixed current through different windings.

Q.7 Discuss the pulsating magnetic field produced by spatially displaced windings.

T-422

5x4=20

Part C (Descriptive/Analytical/Problem Solving/Design question)

Attempt any three questions

Q.1 Explain the stator voltage control of 3- phase induction motors.

Q.2 Develop the equivalent circuit of 3- phase induction motor. Draw and explain the phasor diagram.

Q.3. Explain the construction and working of split phase induction motor with the help of neat sketches.

Q.4. A 1000 KVA, 11000V, 3- phase star connected synchronous motor has an armature resistance and reactance per phase of 3.5 Ω and 40Ω respectively. Determine the induced emf and angular retardation of rotor when fully loaded at (a) unity power factor (b) 0.8 power factor lagging, (c) 0.8 power factor leading. T-422

Q.5 Discuss the physical arrangement of windings in stator and cylindrical rotor with neat sketches.

3x10=30

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