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Electric Machine- II (Lab) — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.6 (Practical) • Total 100 Marks • 2 Credits • L 0 - P 4 • Perform any 10 of 15 practicals

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: This is the lab for the theory paper 4.2 (Electric Machine- II). The PDF lists 15 practicals and says to perform any ten.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.6	Electric Machine- II (Lab)	Practical	0 - 4	2	60	40 (3 hrs)	100
Electric Machine- II (Lab) Total				2	60	40	100

Practical Work

- Identify the different parts (along with function and materials) for the given single phase and three phase induction motor.
- Connect and run the three-phase squirrel cage induction motors (in both directions) using the DOL, star-delta, auto-transformer starters (any two).

- Perform the direct load test on the three-phase squirrel cage induction motor and plot the (a) efficiency versus output, (b) power factor versus output, (c) power factor versus motor current and (d) torque – slip/speed characteristics.
- Conduct the No-load and Blocked-rotor tests on given 3-phase squirrel cage induction motor and determine the equivalent circuit parameters.
- Control the speed of the given three phase squirrel cage/slip ring induction motor using the applicable methods: (a) auto-transformer, (b) VVVF.
- Measure the open circuit voltage ratio of the three-phase slip ring induction motor.
- Conduct the direct load test to determine the efficiency and speed regulation for different loads on the given single phase induction motor; plot the efficiency and speed regulation curves with respect to the output power.
- Demonstrate that power factor of an induction motor load is improved by connecting capacitor bank.
- Perform the direct loading test on the given three phase alternator and determine the regulation and efficiency.
- Determine the regulation and efficiency of the given three phase alternator from OC and SC tests (Synchronous impedance method).
- Conduct the test on load or no load to plot the 'V' curves and inverted 'V' curves (at no-load) of 3-phase synchronous motor.
- Synchronization of 3 Phase Alternators by a) Lamp method. b) Synchroscope method.
- Control the speed and reverse the direction of stepper motor.
- Control the speed and reverse the direction of the AC servo motor.
- Control the speed and reverse the direction of the DC servo motor.

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Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.