Pre-Lab Assessment: Induction Machine Lab

- **Description**: This assessment evaluates your current knowledge and skills before the induction machine laboratory session. Please answer all questions honestly. This will help us measure the effectiveness of the lab experience.
- **Estimated Time**: 15-20 minutes

Student Information

1. Student name

2. Student ID

3. Gender

- ◯ Man
- ◯ Woman

4. Program

- ◯ BFM
- ◯ BTI/BTX
- ◯ BHM

5. What is your previous experience with electrical machines and motors?

- ◯ None - No prior experience
- ◯ Basic - Studied in theory only
- ◯ Intermediate - Some practical experience
- ◯ Advanced - Extensive practical experience

6. What is your previous experience with virtual laboratory simulations?

- ◯ None - Never used virtual labs
- ◯ Basic - Used 1-2 virtual labs before
- ◯ Intermediate - Regularly use virtual labs
- ◯ Advanced - Extensive experience with virtual labs

Section

THEORETICAL KNOWLEDGE (CONCEIVE)

7. What is the synchronous speed of a 4-pole induction motor connected to a 50Hz supply?

- ◯ 1000 rpm
- ◯ 1200 rpm
- ◯ 1500 rpm
- ◯ 1800 rpm

8. The slip of an induction motor is defined as:

- ◯ (Ns - Nr)/Ns 1
- ◯ (Nr - Ns)/Nr
- ◯ Ns/Nr
- ◯ Nr/Ns

9. At no-load condition, the slip of an induction motor is:

- ◯ Zero
- ◯ Very small (1-3%)
- ◯ Around 5%
- ◯ Maximum

10. Rate your current understanding of no-load testing of electrical machines.
1 (No understanding) to 5 (Complete understanding)

1	2	3	4	5

11. Rate your current understanding of "slip" in induction motors

1	2	3	4	5

12. Rate your current understanding of power factor measurement in AC circuits

1	2	3	4	5

13. Rate your current understanding of speed-torque characteristics in motors

1	2	3	4	5

EXPERIMENTAL DESIGN KNOWLEDGE (DESIGN)

14. To measure the power factor of a 3-phase induction motor, which method would you use?

- ◯ Single wattmeter method
- ◯ Two wattmeter method
- ◯ Three wattmeter method
- ◯ Voltmeter-ammeter method

15. In a no-load test, which parameter would you expect to remain relatively constant as voltage varies?

- ◯ Current
- ◯ Power factor
- ◯ Speed
- ◯ Power consumption

16. Rate your confidence in setting up electrical measurement equipment safely**Scale**: 1 (Not confident) to 5 (Very confident)

1	2	3	4	5

17. Rate your confidence in selecting appropriate voltage ranges for motor testing

1	2	3	4	5

18. Rate your confidence in identifying and following electrical safety procedures

1	2	3	4	5

19. Rate your confidence in planning a systematic data collection strategy

1	2	3	4	5

SECTION 4: PRACTICAL SKILLS (IMPLEMENT)

20. Rate your current ability to connect three-phase electrical equipment safely

1	2	3	4	5

21. Rate your current ability to use digital multimeters for AC measurements

1	2	3	4	5

22. Rate your current ability to operate variable voltage sources (like variacs)

1	2	3	4	5

23. Rate your current ability to record experimental data systematically and accurately

1	2	3	4	5

24. When starting an induction motor for testing, you should:

- ◯ Apply full voltage immediately
- ◯ Start with reduced voltage then increase gradually
- ◯ Start with maximum frequency
- ◯ Connect the load first, then power

SECTION 5: ANALYSIS AND APPLICATION (OPERATE)

25. If the slip of an induction motor increases from no-load to full-load, the torque will:

- ◯ Always increase linearly
- ◯ Always decrease
- ◯ First increase then decrease after maximum torque point
- ◯ Remain constant

26. Rate your confidence in calculating slip from speed measurements

1	2	3	4	5

27. Rate your confidence in interpreting power factor variations in motor testing

1	2	3	4	5

28. Rate your confidence in analyzing speed-torque relationships from experimental data

1	2	3	4	5

29. Rate your confidence in drawing meaningful engineering conclusions from experimental results

1	2	3	4	5