Title: **Nameplates and Motor Reversing** Test: 5

Course: Intro to Automation Unit: Manual Motor Control CLO: 1

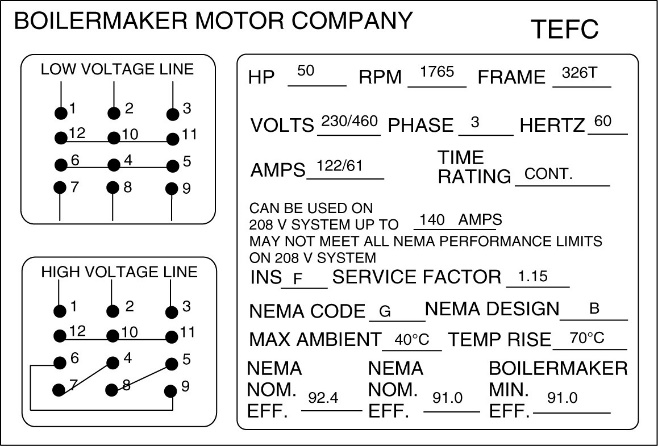
Name ANSWER KEY Grade 22pts. Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall list items found on a single-phase motor nameplate.
2. Student shall calculate the acceptable input voltage range given the motors rated voltage.
3. Student shall identify how to reverse a single-phase AC motor.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Test. Grading shall be based on the answer key.

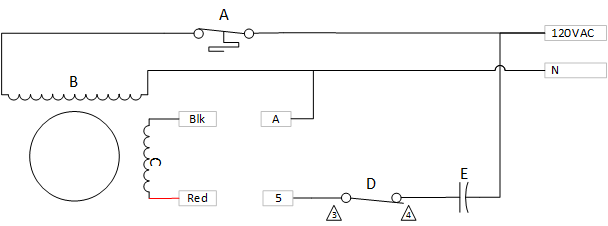
**Instructions**

Answer each of the individual questions below.

1. What is the horsepower for this motor? 50HP
2. How many watts should this motor dissipate? 37,300W or 37.3kW
3. What nominal voltage level would you use to connect to this motor at its lower voltage range? 240V
4. Using the answer from question 3, what is the acceptable range of voltage input to this motor? 207V to 253V
5. What is the RPM for this motor? 1765
6. If the motor is running at the maximum voltage that you calculated above, it would spin at a faster RPM?
   1. True
   2. False
7. What is a safe and acceptable way to vary the speed of this motor?
8. Motor speed can’t be change.
9. Limit the current
10. Decrease the voltage
11. Vary the frequency
12. A motor’s RPM is determined by what two elements (pick two)?
13. The number of poles
14. Source voltage
15. Current draw.
16. Input frequency

**Instructions**

Answer each of the individual questions below.



1. Match the components in the above single-phase motor schematic to their components.
   1. Thermal Switch Run Windings
   2. Run Windings Capacitor
   3. Start Windings Thermal Switch
   4. Start Switch Start Switch
   5. Capacitor Start Windings
2. If the motor is running CCW with Blk wired to A and Red wired to 5, how should the motor be re-wired to obtain a CW rotation? Blk to 5, Red to A
3. Explain why re-wiring this winding causes the motor to rotate in the opposite direction?
   1. A switch inside the motor is changed
   2. AC is flowing in the other direction
   3. The poles of the start windings are reversed
   4. The capacitor is reversed in the circuit
4. This motor cannot change its rotation while running at full speed.
   1. True
   2. False
5. How does having a capacitor in the circuit cause the motor to rotate in one direction or the other?
   1. There is a phase shift where current leads the voltage
   2. There is a phase shift where voltage leads the current
   3. The capacitor does not help change direction
   4. The capacitor changes the direction of current
6. An AC induction motor has a permanent magnet that creates the magnetic field.
   1. True
   2. False
7. All AC motors can be called squirrel cage motors.
8. True
9. False
10. The motor shown in the schematic above cannot be started without the capacitor.
11. True
12. False