ES35C - Pre-Instructional Survey

Name: _____ Date:_____

1. Electronic components used in control and safety systems have multiple failure modes?
   True False

2. The self-diagnostic capability of a controller can have a significant effect on the system safety
   True False

3. The Safety Lifecycle is a method for:
   a. Establishing maintenance cycles for safety systems
   b. A set of documents needed for government regulation compliance
   c. An engineering process for the analysis, design and operation of safety instrumented systems

4. Redundant PLC architectures will assure proper levels of safety.
   True False

5. Experts prefer a complete separation between the control system and the safety system to insure that failures will not affect both systems.
   True False

ES35C - Pre-Instructional Survey Answer Sheet

Name: _____ Date:_____

1. Electronic components used in control and safety systems have multiple failure modes?
   True - for example transistors can fail short circuit, open circuit, high leakage, low gain and other modes. For safety instrumented systems, this means that some component failures will result in “safe” failures and some will be “dangerous” (often called “fail to function”).

2. The self-diagnostic capability of a controller can have a significant effect on the system safety.
   True – especially for safety instrumented systems, a dangerous undetected failure is the type that may be present for long periods of time.

3. The Safety Lifecycle is a method for:
   c. An engineering process for the analysis, design and operation of safety instrumented systems

The Safety Lifecycle is one of foundation concepts in new functional safety standards including ISA 84.01, IEC61508 and IEC61511.

4 Redundant PLC architectures will assure proper levels of safety.
False – safety is a measure of the how often a piece of equipment fails in a “dangerous” manner, not a measure of how often a piece of equipment fails.

5. Experts prefer a complete separation between the control system and the safety system to insure that failures will not affect both systems.
True – There are many reasons for this including management of change, documentation, independence of protection layers and others.