

EC51CT: Pre-Instructional Survey

- 1) A “good” test plan:
 - a) Can be executed by any maintenance staff
 - b) Is less than 5 pages long
 - c) Does not test the final element as this could result in production loss
 - d) Tests for “all” dangerous undetected failures

- 2) The four failure modes as defined by IEC61511 are:
 - a) Covert, Hidden, Safe, Dangerous
 - b) Dangerous, Detected, Hidden, Safe
 - c) Dangerous Detected, Dangerous Undetected, Safe Detected, Safe Undetected
 - d) Degraded Dangerous, Degraded Safe, Detected Dangerous, Detected Safe

- 3) Deferral of testing a Safety Instrumented Function at the scheduled test interval does not have any negative impacts on the amount of risk reduction the Safety Instrumented Function is capable of providing.
 - a) True
 - b) False

- 4) Proof Test Coverage has significant impacts on the amount of risk reduction the Safety Instrumented Function is capable of providing.
 - a) True
 - b) False

- 5) When a Safety Instrumented Function is actuated, it should be considered a near miss and a root cause analysis / incident investigation should be completed.
 - a) True
 - b) False

- 6) Part of Prior Use justification should be the development of an approved list of instruments to be used with Safety Instrumented Systems that documents make/model #, as well as, service, installation specifics, etc.
- a) True
 - b) False
- 7) Collection of failure rate data from corrective work orders is not required per the IEC61511 Safety Lifecycle.
- a) True
 - b) False
- 8) Use of field devices (sensors / final elements) that has been certified to IEC61508 and contains a SIL claim limit is mandatory.
- a) True
 - b) False
- 9) Operations would like a signal splitter to be installed to allow the 4-20 mA signal currently being sent to the SIS logic solver to be split so it can be sent in parallel manner to the SIS logic solver and the BPCS logic solver. Is a MOC required for this change?
- a) True
 - b) False
- 10) Bypassing a Safety Instrumented Function may be required for:
- a) Maintenance, functional testing, and replacement
 - b) Prevention of nuisance alarms
 - c) Keep from shutting down an effected operating area during upset conditions
 - d) Safety Instrumented Functions are not permitted to be bypassed under any circumstance
- 11) Process Safety Metrics (KPIs) are used for?
- a) To measure the effectiveness of a Process Safety Program
 - b) To validate the effectiveness of a Safety Lifecycle
 - c) To reduce the Recordable Incident Rate of personnel injuries
 - d) All of the above

12) The following Process Safety Metrics (KPIs) are mandatory in IEC61511:

- a) Tracking Safety Instrumented Function Time in Bypass
- b) Assumed Demand Rate vs Actual Demand Rate
- c) Assumed Device Failure Rate vs Actual Device Failure Rate
- d) Assumed test interval vs actual test interval
- e) All of the above

EC51 – Pre-Instructional Survey Answer Sheet

1. D
2. C
3. False
4. True
5. True
6. True
7. False
8. False
9. True
10. A
11. D
12. E