STUDY AND TEST MATERIAL FOR THE

FA2 and FA4

ASSESSMENTS

(Fire Alarm On-Site and Business Cert. Holder)

REV January 20, 2011

This document contains sample questions to help participants study for the FA2 and FA4 assessments.

If you intend to take this booklet into the test, make sure it is bound in a binder or stapled. You will not be allowed to take any material into the test center if it is not bound.

(IMPORTANT: Material provided is not intended to endorse, represent quality, recommend a particular product, or single out any product. Material may be used to provide standardized content for test questions to ensure that participants know how to use data sheets and manufacturer materials to establish listing and installation limitations of these types of products. There is no implied or other relationship between CSA and the manufacturers or suppliers of information used. CSA is not liable for accuracy or content of material contained within these documents. Material in this booklet is for testing purposes only and is not to be used for installation of these systems / components. Check with suppliers for current and specific information to be used in actual design and installation conditions.)

About the Assessments:

Assessment Abbreviation: FA2

Number of Questions: 77

Amount of Time for Test: 120 Minutes

Assessment Abbreviation: FA4

Number of Questions: 100

Amount of Time for Test: 180

Exam format: Open book (bring your own books); calculators will be available, writing tablet or paper will be provided for calculations. Any books or exam documents brought into exam must be bound as no loose papers are allowed.

Passing Score: 80%

Cell Phones: Do not bring cell phones, pagers, or radios into the test center.

Codes / Materials Used for Exam and Editions:

- 2010 NFPA 72
- 2005 or 2008 NFPA 70 (NEC)
- There may be a couple questions related to Occupational Safety and Health Act related to Lock-out Tag-out
- FA4 Assessment includes 2009 International Building Code or International Fire Code (either will work)
- FA4 Assessment may include questions related to NFPA 20 for Fire Pump Monitoring

General Assessment Information:

About the Questions: Questions are randomly selected from respective topics within a larger database. Answer choices are randomly mixed, meaning that choice "B" will not always be in position "B".

Exam Format: Questions are computer based and will be delivered one at a time. You will have the opportunity to go back and review all questions. You can also "check" a box within each question which will flag it for later review. During the review, checked questions will be marked for easier identification. See the document on "Screen Shots" under the "Test Info" link on our web site.

Time Clock: Most assessments will have a count-down timer displayed on the screen. It may appear as if this timer is fluctuating between questions (gaining time on one question and loosing time on the next question). This is normal. The software has a specific function which ensures your time is protected if there is a loss of the Internet connection. It is very difficult to explain the logic behind the clock. However, we can assure you that you are getting all of your time. Do not steadily watch the clock, but rather use it as a general guide. Long pauses between questions will result in the biggest time jump as the computers verify that you are still testing and did not loose the Internet connection.

The following questions are related to the FA2 and FA4 Assessments. Additional questions that are specific to only the FA4 assessment are later in this document.

1. Which wire size is largest in diameter?
a) 12 AWG
b) 18 AWG
c) 14 AWG
d) 24 AWG

2. Which wire size has the least resistance in Ohms?
a) 12 AWG
b) 18 AWG
c) 14 AWG
d) 24 AWG

3. Ohms law is defined by what equation?
a) a2+ b2= c2
b) V=IR
c) l x w = a
d) r + i = v

4. A fire alarm circuit has five strobes with current values of 0.125A, 0.095A, 0.209A, 0.209A, 0.209A. What is the total current of these devices?

First, we need to know Ohms Law: V=IR, in our case V is V_{drop} or the Voltage drop

Answer: 0.125A + 0.095A + 0.209A + 0.209A + 0.209A = 0.847A

Using the information above, and a wire resistance of 3.07 ohm per 1,000 feet (0.00307 ohms per foot). The total distance between the panel to the last device is 500 ft. What is the voltage drop on the circuit?

Answer: First you must account for the wire resistance in the pair of wires (out and back). Thus, the total distance of wire is 1,000 ft. Using ohms law you calculate the following: V = 0.847A x (1,000 x 0.00307). This results in a voltage drop of 2.60 volts.

The standard format that NFPA 70 and manufacturers provide wire resistance is ohms per 1,000 feet. If a question is provided with this format you will need to convert this to a resistance/foot. Example: Resistance is 3.07 ohms per 1,000 ft is converted by 3.07 ohms / 1000 ft = 0.00307 ohms/ft

If you were asked to find the end-of-line voltage you would apply the starting voltage - voltage drop = end-of-line voltage. Such as 24 - 2.6 = 21.4 volts at end-of-line.

5. Given a wire resistance value of R = 4.89 Ohms/1000ft from NEC Chapter 9, Table 8 and excluding temperature (16 AWG wire).
Class B circuit
The circuit was designed with a conduit length between panel and last device of 800 feet (red wire out to device).
Circuit has 8 - 110 cd strobes at 200ma each (I = 1.6 amp) [8 x 200ma = 1600ma or 1.6A].
Nominal panel voltage of 24 vdc
What is the voltage drop in this circuit using lump-sum approach?
0.46 volts
12.5 volts (correct)
14.2 volts
1.96 volts

6. Which term defines a mandatory requirement of the code?
a) should
b) must
c) AHJ
d) shall

7. What section of the 2010 edition of NFPA 72 applies to Power Supplies?
a) 1.2
b) 10.5
c) 12.1
d) 26.2.3

8. Several documents are required to be provided to an owner. Out of those listed, which form (document) is required to be completed and delivered to the owner upon completion of a mass notification system?
a) Flush Test
b) Invoice
c) Maintenance contract
d) Record of Completion

9. Visual notification appliances are required in all stairs.
True
False

10. Notification zones shall be consistent with the emergency response or evacuation plan for the protected premises.
True
False

11. In accordance with NFPA 72, elevators are not allowed to be used for emergency egress during a fire.
True
False

12. Detection devices used for door hold-open release service is not required to be monitored for integrity if within 5’ of the door.
True
False

The following questions represent questions that may be found on the FA4 Assessment in addition to the types of questions included in the FA2 Assessment.

13. Smoke detectors are installed under a raised floor. The air changes per hour within the under floor space is 20. In accordance with NFPA 72, what is the spacing of each detector?
a) 900 square feet
b) 125 square feet
c) 500 square feet
d) 375 square feet

13. You have a motel with 160 guest rooms. In accordance with the IBC, how many sleeping units are required to have visible alarms?
a) 4
b) 7
c) 9
d) 14

14. You are replacing a fire alarm system in a Business occupancy that has an older audible alarm system with no visual notification. In accordance with the IBC, you are not required to provide visual notification because this is a replacement and not a new system.
True
False

15. In accordance with the IBC, you are not allowed to use an emergency voice evacuation system for non-emergency messages such as paging.
True
False

In addition to the above questions, there will be voltage drop calculation questions that are slightly more difficult than those used in the FA2 exam.