North Central Regional Mine Rescue Contest: Wilmington, IL

April 3, 2013

Team Written Test

Team Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Team Member Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Position Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. MSHA requires mine rescue stations serving underground M/NM mines to have two gas detectors appropriate for each gas which may be encountered at the mines served.

A. True

B. False

1. A permanent bulkhead is usually built of canvas brattice cloth, plastic, and sometimes wood or metal.

A. True

B. False

1. What two instruments are commonly used to measure air movement?

A. Anemometer and the smoke tube

B. Anemometer and a watch

C. A smoke tube and fan

D. A smoke tube and watch

1. The purpose of an air lock is to separate two different atmospheres while still permitting miners to enter and exit without mixing the atmospheres.

A. True

B. False

1. When installing a temporary bulkhead in a passageway, particularly in a crosscut of a room-and – pillar, single level mine, the bulkhead should be erected how far into the passageway to permit enough room for a permanent bulkhead to be built later?

A. At least 1 - 2 feet

B. At least 2 - feet

C. At least 3 feet

D. At least 4 - 6 feet

1. The smoke tube is used to show the direction and velocity of air moving above 120 feet per minute.

A. True

B. False

1. The term used to describe the process of assessing conditions underground and locating miners during a rescue or recovery operation is called:

A. Searching

B. Exploration

C. Discovery

D. Maneuvering

1. Gas detectors must measure concentrations of methane from 0.0 percent to 50 percent of volume, oxygen from 0.0 percent to at least 22 percent of volume, and carbon monoxide from 0.0 parts per million to at least 9,999 parts per million.

A. True

B. False

1. How many signals indicate retreat?

A. One

B. Three

C. Four

D. Two

1. Class “C” fires involve:

A. Wood

B. Combustible metals

C. Flammable liquids

D. Electrical equipment

1. Direct firefighting involves fighting the fire from a distance by sealing the fire or by filling the area with foam, sand fill, or water.

A. True

B. False

1. Hydrogen is produced by the incomplete combustion of carbon materials during fires.

A. True

B. False

1. The relative weight of gas is the same as specific gravity.

A. True

B. false

1. Sulfur dioxide and hydrogen sulfide are water-soluble gases.

A. True

B. False

1. Methane, Hydrogen, Nitrogen and Carbon Monoxide are all flammable gases.

A. True

B. False

1. Knowing the effects of air current, temperature, and pressure on a gas will help you determine its rate of diffusion.

A. True

B. False

1. Which gases are considered highly toxic?

A. Nitrogen Dioxide

B. Hydrogen Sulfide

C. Carbon Monoxide

D. All of the choices

E. None of the choices

1. Hydrogen Sulfide has these two characteristics:

A. Has a Specific Gravity of 0.9345 and is flammable

B. Has a Specific Gravity of 1.1906 and is flammable

C. Has a Specific Gravity of 0.5211 and is non-flammable flammable

D. Has a Specific Gravity of 2.703 and is explosive in 1% normal air.

1. Rock-Strata gases commonly called “rock gas” is assumed to contain what two types of gases?

A. Hydrogen and Carbon Monoxide

B. Nitrogen and Sulfur Dioxide

C. Nitrogen and Carbon Dioxide

D. Hydrogen Sulfide and Hydrogen

1. When a barometer raises indicating increased pressure, gas responds by contracting.

A. True

B. False

1. What is the explosive range for Carbon Monoxide in normal air?

A. 10.5 -15 percent

B. 5.5 – 15.2 percent

C. 20 - 40.8 percent

D. 12.5 – 74.2 percent

1. When using recovery by progressive ventilation, air locking operations should always begin on the intake side of a fire.

A. True

B. False

1. What type of ventilation involves the re-ventilation, of a sealed area in successive blocks by means of air locks?

A. Direct ventilation

B. Re-direct ventilation

C. Progressive ventilation

D. Combination ventilation

1. Which condition is triaged as a priority upon finding a survivor?

A. Multiple lacerations

B. Back injuries

C. Airway or breathing problems

D. Multiple fractures

1. The best way to relieve psychological stress in survivors is to try to communicate with them as soon as possible.
2. True
3. False
4. The Command Center for rescue and recovery operations is generally only consisting of federal and state officials.

A. True

B. False

1. What part of the 30 Code of Federal Regulations requires mines to have and post a Mine Rescue Notification Plan?

A. Part 57

B. Part 49

C. Part 48

D. Part 47

1. During exploration of a mine, a mine rescue team can alter ventilation anytime they deem necessary, then report to the command center.

A. True

B. False

1. The only purpose for mine ventilation is to provide adequate oxygen throughout the mine.

A. True

B. False

1. Ventilation controls affect the amount of air that travels and the direction of the flow.

A. True

B. False