

Welcome Contestants
Central Mine Rescue Contest
May 12 through May 14, 2016
Kellogg, Idaho

Team Trainer Written Examination KEY

Choose the most appropriate answer or answers for the questions that follow. Use the supplied score card to record your answers. Please ensure the marks you make are **dark** and **completely fill the box**. If you make a mistake you must completely erase the mark you've made. Improperly marked sheets can result in an incorrect answer.

1. Miners working on the surface of an underground mine cannot under any circumstance serve on an underground mine rescue team.
 - a. True
 - b. **False (49.2(c) For the purpose of mine rescue work only, miners who are employed on the surface but work regularly underground shall meet the experience requirement.)**

2. In order to apply for "Alternative Mine Rescue Capability for Small and Remote Mines", a mine operator must know how many miners are working underground at mines within 2 hours ground travel time of their mine. To qualify for "Small and Remote" the total underground employment at their mine and those within 2 hours ground travel time must be less than ____.
 - a. 12
 - b. 24
 - c. **36 (49.3(a) - For the purposes of this part only, consideration for small and remote shall be given where the total underground employment of the operator's mine and any surrounding mine(s) within two hours ground travel time of the operator's mine is less than 36.)**
 - d. 48

3. Under 30 CFR, 49.6(a)(5) cap lamps do not need to be permissible.
 - a. True
 - b. **False (§ 49.6 Equipment and maintenance requirements. (a) (5) Twelve permissible cap lamps and a charging rack;)**

4. Under 49.7(a), a team member requiring corrective eyewear is not disqualified provided the eyeglasses _____.
 - a. Have lenses made of plastic
 - b. Have lenses that react to light by getting darker
 - c. Do not have a rim

- d. Can be worn securely within an approved facepiece (49.7(a) A team member requiring corrective eyeglasses will not be disqualified provided the eyeglasses can be worn securely within an approved facepiece.)
5. How long does the initial course of instruction in the use, care, and maintenance of the type of breathing apparatus used by the team have to be?
- a. 2 hours
 - b. 10 hours
 - c. 20 hours (49.8(a) “at a minimum, an initial 20-hour course of instruction as prescribed by MSHA’s Office of Educational Policy and Development, in the use, care, and maintenance of the type of breathing apparatus which will be used by the mine rescue team.”)
 - d. None of the above
6. In the event of mine rescue field ties there are ___ potential tie breakers considered to determine the winner.
- a. 6
 - b. 5 (M/NM Contest Rules, page 10 - In the event of mine rescue field competition ties, the underground discount sheet will be the first tie breaker, the surface discount sheet will be the second tie breaker, mine maps will be the third tie breaker, the written test will be the fourth tie breaker, and time will be the fifth tie breaker.)
 - c. 4
 - d. 3
7. According to the rules the rear captain relays the signal to advance to the fresh air base.
- a. True (M/NM Contest Rules, page 25 - The captain must give the signal to advance. The stretcher bearers should pick up the stretchers, and the **rear captain shall relay the signal to the fresh air base**. When the signal is returned, the team may now advance into the mine.)
 - b. False
8. The hoist signal used to release a conveyance is _____.
- a. 1-2-1 bells
 - b. 3-3-1 bells
 - c. 3-1-2 bells
 - d. 2-1-1 bells
 - e. None of the above (M/NM Contest Rules, page 25 - 2-1-2 bells)
9. No barricade will be breached without ventilating in front of the barricade if Carbon Dioxide (CO₂) exceeds 4%.

- a. True (M/NM Contest rules, page 28 - Oxygen (O₂) is below 17.0%; or Carbon Monoxide (CO) exceeds 1200 ppm (0.12%); or Hydrogen Sulfide (H₂S) exceeds 100 ppm (0.01%); or Nitrogen Dioxide (NO₂) exceeds 20 ppm (0.002%); or Sulfur Dioxide (SO₂) exceeds 100 ppm (0.01%); or **Carbon Dioxide (CO₂) exceeds 4.0%.**)
 - b. False
10. Regulating airflow to control a fire is considered a ventilation change.
- a. True
 - b. **False (M/NM Contest Rules, page 32 - Regulating airflow to control a fire is not considered a ventilation change.)**
11. Marked maps (both team and fresh air base) must show _____.
- a. Conditions of all faces
 - b. The location of all placards or materials
 - c. Location of dead bodies
 - d. **All of the above (M/NM Contest Rules, page 31 - The marked maps must show: the **condition of all faces**, stoppings and doors; the **location of all placards or materials**; the location of fires and barricades; and the location of **dead bodies and survivors (including identification).**)**
 - e. B and C only
12. The maximum spacing between temporary roof supports is ___ feet.
- a. **5 (M/NM Contest Rules, pages 33, 35, 36 and 37)**
 - b. 4.5
 - c. 7
 - d. 6.5
13. The specific gravity of Nitrogen is:
- a. 1.1
 - b. 0.8531
 - c. 1.34
 - d. **0.9674 (Correct, page 2-14)**
14. The explosive range for carbon monoxide in normal air is:
- a. 5 to 15%
 - b. 1 to 10%
 - c. **12.5 to 74.2% (Correct, page 2-16)**
 - d. None of the above
15. The specific gravity of hydrogen is:
- a. 0.0925
 - b. **0.0695 (Correct, page 2-18)**

- c. 1.1
- d. 1.657

16. Choose the **incorrect** statement below:

- a. Methane is explosive where there is at least 12.1 percent oxygen
- b. **Methane is toxic (Correct, page 2-22, it is considered an asphyxiant)**
- c. The explosive range of Methane is 5 to 15 percent.
- d. Methane is a gas

17. The command center should be consulted before making changes to ventilation because making the wrong alterations can _____.

- a. Cause changes in the air at the fresh air base
- b. Force explosive gas over a fire or hot spot
- c. Redirect and feed air to a fire
- d. **All of the above (Correct, page 3-15, WARNING: The wrong alterations could cause changes in the air at the fresh air base, push deadly gases or smoke into areas where survivors are located, force explosive gases back over fire areas or hot spots and cause an explosion, or redirect and feed air to a fire.)**

18. The team captain should make sure each team member's apparatus has been properly prepared and tested before going underground.

- a. **True (Correct, page 4-17, #2 on the list of things to do before going underground)**
- b. False

19. Before going underground to explore or fight a fire the team should make sure that:

- a. The main fan is turned off
- b. **A guard is monitoring the operation of the fan (Correct, page 5-12, "When a team goes into a mine to explore or fight a fire, it should be concerned with two main things – spreading of the fire and the possibility of an explosion. Before going underground, the team should make sure that the **main fan is running**, that **a guard is monitoring the operation of the fan**, and that **tests are being made at the main exhausts** for any gases that may be present in the mine.")**
- c. Gases are being monitored at the intake
- d. All of the above

20. When preparing for opening a sealed fire area, adjustments must be made so that toxic and explosive gases are directed into the main intake air.

- a. True
- b. **False (Correct, page 7-6, "1. Adjustments in ventilation should be made so that toxic and explosive gases released from the sealed area are directed into the main exhausts.")**

21. Which answer is true:

- a. When tightening the oxygen bottle connection you should always use the wrench supplied by the manufacturer.
 - b. Before inserting the oxygen bottle into the apparatus you should always apply a little bit of bearing grease to the threads.
 - c. It's okay to use rechargeable batteries from any manufacturer in an apparatus.
 - d. **None of the above (A. None of the manufacturers supply & wrench and both Bio & Draeger recommend hand tight. B. You NEVER apply grease. C. Manufacturers specifically identify the type of batteries used in their apparatus)**
22. If a breathing apparatus is properly assembled and the ambient temperature stays at a steady 75 degrees F, the cooler keeps the air you breathe at a steady 76 degrees F regardless of how long you use it.
- a. True
 - b. **False (table on page 52 of the PSS BG 4 Service Manual, the temperature begins to rise very soon after the wearer begins using it & continues to rise.)**
23. Soaking the cleanable parts of an apparatus in disinfectant can damage them.
- a. **True (General care of unit instructions on page 39 of the PSS BG 4 Service Manual)**
 - b. False
24. When using the optional alkaline battery pack for the MX6 it's okay to mix alkaline batteries made by different companies.
- a. True
 - b. **False (Manufacturers specify which batteries to use & they should never be mixed, page 3 or 5 MX6 manual)**
25. Rescue breathing may be necessary when a patient is breathing normally
- a. True
 - b. **False (There is no need to provide rescue breathing to patients who are breathing normally. Rescue breathing is performed on patients not breathing normally with agonal respirations or patients who are not breathing at all. . EMR 9th, Page 141.)**
26. The most common cause of airway obstruction in an unresponsive patient is:
- a. Ice
 - b. Small toys
 - c. Food
 - d. **Tongue (the tongue is the most common cause of airway obstruction in an unconscious patient. Caused when the tongue falls back in the throat and blocks the airway. EMR 9th, Page 148.)**
27. When taking an initial assessment of a patient's pulse, if you do not feel a radial pulse you should immediately:
- a. Check for the presence of a brachial pulse

- b. Perform a rapid physical exam, take vital signs, gather patient history
- c. Check airway and begin CPR
- d. *Check for the presence of a carotid pulse (when a radial pulse cannot be felt, you should check for a carotid pulse in the neck. Often when there is no radial pulse, the patient has a carotid pulse. The lack of a radial pulse may indicate low blood pressure or an injury to the extremity that is interrupting blood flow. Always confirm there is no carotid pulse before beginning CPR. EMR 9th, page 225)*

28. When assessing a responsive patient's breathing, you should FIRST:

- a. *Grasp the patient's wrist as if you were going to count the pulse rate (this should be done first when trying to assess breaths because many patients will alter their respiratory rate when someone is watching them breathe. EMR 9th, Page 223.)*
- b. Listen for abnormal breath sounds
- c. Count the number of breaths for 15 to 30 seconds
- d. Observe the abdomen move in and out

29. The term "vital signs" refers to:

- a. Level of consciousness
- b. Perspiration
- c. *That which is vital to the continuation of life (Vital signs include five specific signs; skin signs, respiration, pulse, blood pressure and pupils. EMR 9th. Page 221)*
- d. Rapid assessment

30. A multi-casualty incident (MCI) is an emergency with more than _____ victim(s):

- a. *One (An MCI is any emergency with more than one patient or victim. EMR 9th, Page 584.)*
- b. Two
- c. Five
- d. Ten