

Written Field Test
Southern Regional Mine Rescue Contest
New Iberia, LA
2009

1. Color, odor and taste are physical properties that can help you identify a gas, especially during barefaced exploration. Hydrogen sulfide, for example has a distinctive “boiled egg” odor.
 - a. True
 - b. False
2. Carbon Monoxide (CO) has a specific gravity of 1.9672 and its explosive range in normal air is 12.5 to 74.2 percent.
 - a. True
 - b. False
3. Hydrogen Sulfide (H₂S) has a specific gravity of 1.1906 and is flammable and explosive in concentrations from 4.3 to 45.5 % in normal air. It is most explosive at 14.2 %.
 - a. True
 - b. False
4. After taking a ventilation reading of 200 feet per minute (fpm) in a drift measuring 10 feet by 10 feet. We no deductions for obstructions, the cubic feet per minute (CFM) would be
 - a. 20000 cfm
 - b. 2000 cfm
 - c. 20 cfm
 - d. None of the above
5. A monoammonium phosphate extinguisher is effective in fighting:
 - a. Class a Fires
 - b. Class b Fires
 - c. Class c Fires
 - d. All of the above

6. Determining when to unseal a fire is based on:
 - a. Laws of physics
 - b. Chemistry
 - c. Experience and sound judgment
 - d. All of the above
7. Air locking operations should never be undertaken until the oxygen content of the air behind the seals has been reduced to at least 10 percent.
 - a. True
 - b. False
8. C_2H_2 has a specific gravity of 0.9107, it is highly toxic and colorless and tasteless. Its name is:
 - a. Radon
 - b. Propane
 - c. Acetylene
 - d. Butane
9. Ethane (C_2H_6) is not toxic but at high concentrations it can
 - a. Spontaneously combust
 - b. Turn to liquid
 - c. Displace oxygen
 - d. Smell like rotten eggs
10. Gases that are neither toxic nor explosive:
 - a. are not found in mine atmospheres
 - b. are not dangerous
 - c. can be dangerous because they can displace oxygen
 - d. cannot be detected with today's detection instruments
11. If your team's communication system fails, the cable from the system can be used to communicate with the fresh air base as long as the cable meets the requirement's set forth in Title 30 CFR, Part 49.6.
 - a. True
 - b. False

12. Hydrogen is highly explosive in mine atmospheres. Its explosive range is 4.0 to 74.2%, when there is at least ____ percent oxygen present.
- a. 10
 - b. 19.5
 - c. 12.1
 - d. 5
13. The chemical symbol for propane is _____.
- a. C_2H_2
 - b. C_3H_8
 - c. C_4H_{10}
 - d. C_2H_6
14. There are four main causes of oxygen deficiency in a mine. Which of the following is not a cause?
- a. displacement
 - b. consumption
 - c. poor ventilation
 - d. none of the above
15. The sorting of victims is commonly referred to as a _____ system.
- a. Selection
 - b. Categorizing
 - c. Triage
 - d. EMS
16. Before using _____ ventilation, there should be conclusive evidence that the fire has been extinguished.
- a. Mechanical
 - b. Direct
 - c. Natural
 - d. Progressive
17. Breathing large amounts of _____ causes rapid breathing and insufficient intake of oxygen. Too much of it in the bloodstream can cause loss of consciousness and even death.
- a. Carbon monoxide
 - b. Oxides of nitrogen
 - c. Carbon dioxide
 - d. Nitrogen dioxide

18. As little as 500 PPM or 0.005 percent Carbon Monoxide can kill you in three hours.
- a. True
 - b. False
19. It doesn't take much CO to interfere with your blood's oxygen-carrying capacity because the gas combines with hemoglobin ____ to ____ times more readily than oxygen.
- a. 100 to 200
 - b. 200 to 300
 - c. 300 to 400
 - d. 400 to 500
20. Second degree burns involving 15 to 30 percent of the body is an example of _____ priority conditions.
- a. First
 - b. Second
 - c. Third
 - d. None of the above
21. High nitrogen dioxide readings could indicate:
- a. There has been a fire or explosion
 - b. Malfunctioning electrical equipment producing arcs
 - c. Inadequate ventilation of diesel equipment
 - d. All of the above
 - e. None of the above
22. The main objective of recovery work is to put the affected area of the mine back in operation as soon as conditions permit after a mine disaster.
- a. True
 - b. False
23. Pressures within and without a sealed area of a mine generally will not vary according to temperatures and barometric changes.
- a. True
 - b. False
24. A person trained in the use and care of breathing apparatus shall inspect and test the apparatus at least once per week?
- a. True
 - b. False

25. Each team member must complete 20 hours of training within the first six months of joining the team and every 12 months thereafter?
- a True
 - b False
26. Members of a mine rescue team must do which of the following:
- a Pass a physical at least 60 days prior to scheduled initial training
 - b. Pass a physical annually after the initial physical
 - c. Have uncorrected vision of 20/50 or better in both eyes
 - d. (a) and (b) above
 - e. Only (c) above
27. Prior to rescue team exploration, the first step to take after a disaster is to
- a. examine all mine openings
 - b. establish a fresh air base
 - c. proceed as far as possible into the mine without apparatus
 - d. none of the above
28. Hydrogen is highly explosive in mine atmospheres. Its explosives range is 5.0 to 75% when there is a least 55 oxygen present.
- a. True
 - b. False
29. Afterdamp which is usually found after a mine fire or explosion is a mixture of Carbon Dioxide, Nitrogen and air.
- a. True
 - b. False
30. Whitedamp is a mixture of carbon monoxide and air which results from the mine fire. It gets its name "Whitedamp" from the fact the gases hang in the air and appear to be smoke.
- a. True
 - b. False

31. A positive indication that a fire exists in a mine is;
- Carbon monoxide and/or smoke in the exhaust ways
 - Methane and carbon dioxide in the exhaust ways
 - Lowered oxygen content in the exhaust airways
 - A disruption in normal ventilation
32. Burning materials that give off extremely toxic gases in addition to carbon monoxide are:
- Timbers
 - Hydraulic fluids
 - Neoprene and other synthetic rubber compounds
 - All of the above
33. Methane has a specific gravity of 0.5 and seeks Low places:
- True
 - False
34. Carbon Monoxide has a specific gravity of 0.96 and seeks low places:
- True
 - False
35. H₂S has a specific gravity of 1.1906 , has an explosive range of 4.3 to 45.5% in normal air and seeks low places:
- True
 - False