

Rolla MO
Written test
2009

1. When making an air velocity measurement with an anemometer, you should hold the instrument at arm's length in front of you with the air entering the dial side.
 - a. True
 - b. False
2. Under normal conditions the only two gases that will be found at a mine is Oxygen and Nitrogen.
 - a. True
 - b. False
3. The rate of gas diffusion is decreased by higher velocities of air currents.
 - a. True
 - b. False
4. A decrease in pressure causes a gas to expand.
 - a. True
 - b. False
5. High temperatures (or heat) cause gases to expand, so they diffuse more slowly.
 - a. True
 - b. False
6. Carbon Monoxide (CO) is explosive and flammable. Its explosive range in normal air is
 - a. 5.5 to 10.5 percent
 - b. 12.5 to 50 percent
 - c. 12.5 to 74.2 percent
 - d. 15.5 to 75 percent
7. Carbon Monoxide (CO) is explosive and flammable but not toxic.
 - a. True
 - b. False

8. Which of the following gas is not a heavy hydrocarbon
- Ethane
 - Propane
 - Butane
 - Acetylene
9. Sulfur Dioxide gas in concentrations as low as _____ is dangerous to life.
- .02 to .07 %
 - .01 to .05%
 - .04 to .05%
 - .4 to .5%
 - .004 to .005%
10. The chemical symbol for acetylene is
- C_2H_4
 - C_3H_6
 - C_2H_2
 - C_4H_4
 - A_2C_4
11. If you took a ventilation reading in a drift 14 feet wide and 16 feet high and record a true reading of 1200 feet per minute, what are the cubic feet per minute?
- 2400 cfm
 - 250,000 cfm
 - 268,800 cfm
 - 286,800 cfm
12. Taking a reading in a drift 10 feet wide and 10 feet high and a true reading of 1000 feet per minute the cubic feet per minute would be.
- 1000 cfm
 - 10,000 cfm
 - 100,000 cfm
 - None of the above

13. Requirements for a fresh air base are
 - a. Positive ventilation, travel way for people and supplies, communication reel
 - b. Positive ventilation, Travel way for people and supplies, communication with command center, communication with team
 - c. Fresh air, Communication with command center, communication with team
 - d. None of the above
14. When a team goes into a mine to explore or fight a fire, it should be concerned with two main things.
 - a. Is there a back up team and are they trained
 - b. Spreading of the fire and is there a second way out
 - c. Spreading of the fire and the possibility of an explosion
 - d. Explosions and poor ventilation
 - e. Is the team properly trained for this task and do they have all the equipment needed.
15. 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
 - a. The command center knows where they are going
 - b. A back up team is able and ready to enter the mine
 - c. Tests are being made at the main exhausts for any gases that may be present
 - d. The command center will not let anyone else in the mine until your team returns to the FAB.
16. If a survivor is found in contaminated or questionable air and is fully conscious and ready to travel , the team should
 - a. Get them to fresh air as soon as possible
 - b. Let them continue to head for fresh air so the team can do more important work
 - c. Provide the person with breathing protection and send them toward fresh air.
 - d. None of the above

17. If the team finds more than one survivor in a refuge chamber the team should.
 - a. Do a triage and decide who should leave first, provide breathing protection and send the person to fresh air via shortest course.
 - b. Do a triage and decide who should go first, leave a team member with the remaining person to keep him calm and ensure him the team will be returning.
 - c. Do a triage and load the first selected person onto a stretcher, provide breathing protection and transport to the nearest fresh air base, and repeat process until all survivors are rescued.
 - d. Provide w-65 self rescuers to all of the survivors and get them to fresh air as soon and as quick as they can.
18. In body recovery, a muscular individual will begin putrefaction sooner than an obese person.
 - a. True
 - b. False
19. If a body is found the first thing a team member should do is check all of his/her pockets and look for stuff that will identify him/her.
 - a. True
 - b. False
20. Characteristics of Methane (CH_4) are
 - a. A little bit lighter than air
 - b. 0.55 specific gravity
 - c. A little bit heavier than Hydrogen (H_2)
 - d. A little bit lighter than Carbon Monoxide (CO)
 - e. All of the above
21. The fact that Nitrogen Dioxide (NO_2) is non toxic when encountered by a team they should map and mark it but move on and worry about more dangerous gases.
 - a. True
 - b. False

22. Hydrogen Sulfide (H₂S) is extremely poisonous, at .005 to .010% causes inflammation of the eyes and respiratory tract. .02 to .07% can lead to bronchitis or pneumonia. .07 to 10% can cause rapid unconsciousness, cessation of respiration, and death. .10 to .20% or more can cause rapid death. Additionally it can be absorbed through the skin and be fatal upon contact.
- True
 - False
23. The specific gravity of (H₂) is 0.0695 it will be detected in _____ areas of a drift.
- High
 - Low
24. H₂ has an explosive range of 4.0 to 74.2% with as little as _____% oxygen.
- 2
 - 3
 - 4
 - 5
 - None of the above
25. Carbon Monoxide (CO) has an explosive range of 12.5 to 74.2 percent in _____% oxygen.
- 5
 - 10
 - 15
 - 21
26. When measuring ventilation with a smoke tube one must convert FPS to FPM. Therefore $\frac{23 \text{ seconds}}{60 \text{ seconds}} = \underline{\hspace{2cm}}$
- .28 minute
 - .38 minute
 - .48 minute
 - none of the above

27. A medium -velocity anemometer is used to determine air velocities from _____to _____feet per minute.
- 100/1000
 - 120/1200
 - 120/2000
 - 1000/3000
28. Non-sparking tools and nails must be used in all mines to reduce the chance of a spark that could cause an ignition.
- True
 - False
29. Mine rescue apparatus and equipment shall be maintained in a manner that ensures readiness for immediate use. All apparatus must be inspected by a trained person.
- Once a week
 - Twice a month
 - Once a month
 - Once every 90 days
 - Only before they are going to be worn
30. Team signals of one signal=stop, two signals= advance, three signals=retreat, four signals= distress are international signals all team members know and use.
- True
 - False
31. The fact that an underground fire will seek and demand oxygen it may cause a problem for a team approaching the fire from up wind. To help control this ventilation issue the team can erect a
- Transverse brattice
 - Hurdle brattice
 - Line brattice
 - Regulator
 - A and or B
32. The extremely toxic gas, Carbon Monoxide, is produced by all fire because of the complete combustion of carbon materials during the burning process.
- True
 - False

33. The best way to prevent hydrogen pops during a fire fighting event is to
- a. Build a fire regulator
 - b. Decrease air flow
 - c. Provide adequate air over the fire
 - d. None of the above
34. The command center should stop or reverse the main mine fan if they believe the team is in danger
- a. True
 - b. False
35. If you suspect rubber, neoprene and PVC is burning in a mine one gas that may be present is Arsine and its maximum allowable part per million would be
- a. 0.5
 - b. 0.05
 - c. 0.005
 - d. 5.0