

Choose the correct answer to each of the following questions:

1. How do temperature and pressure affect a gas, and how do these factors affect mine rescue?
 - A. Temperature increases cause expansion. Temperature-decreases cause contraction. Pressure-increases cause contraction. Pressure-decreases cause expansion. Implication: These factors affect the diffusion rate of gases
 - B. Temperature decreases cause expansion. Temperature-increases cause contraction. Pressure-increases cause contraction. Pressure-decreases cause expansion. Implication: These factors affect the diffusion rate of gases
 - C. Temperature increases cause expansion. Temperature-decreases cause contraction. Pressure-decreases cause contraction. Pressure-increases cause expansion. Implication: These factors affect the diffusion rate of gases

2. Why should you know about the characteristic color, odor, and taste of gases you may encounter?
 - A. The characteristic color and, if the team is under apparatus, odor or taste of a gas may be the first clue a rescue team has that the gas is present in the mine
 - B. The characteristic color and, if the team is barefaced, odor or taste of a gas may be the first clue a rescue team has that the gas is not present in the mine
 - C. The characteristic color and, if the team is barefaced, odor or taste of a gas may be the first clue a rescue team has that the gas is present in the mine

3. What is one of the five major damps?
 - A. Afterdamp
 - B. Smokedamp
 - C. Beforedamp

4. The explosive range of a methane/air mixture (normally 5-15%) will change if:
 - A. Certain other non- combustible gases are present, coal dust is suspended in the atmosphere, and there is less than 12.1% oxygen in the atmosphere
 - B. Certain other combustible gases are present, coal dust is suspended in the atmosphere, and there is less than 12.1% oxygen in the atmosphere
 - C. Certain other combustible gases are present, coal dust is suspended in the atmosphere, and there is less than 12% oxygen in the atmosphere

5. Which of the following is not true of Sulfur Dioxide?
 - A. it is explosive
 - B. it can occur during mine fires
 - C. it is highly toxic

6. What is one of the reasons why mine rescue teams should not alter ventilation without authorization from the Command Center?
 - A. It could also result in ventilation changes that would alter the air at the fan
 - B. It could supply additional oxygen to a fire area and “feed” the fire
 - C. It could supply additional oxygen to a non-fire area and start a fire

7. During mine rescue team explorations, the main fan:
 - A. Should be off
 - B. Should be kept running
 - C. Should be monitored once a shift

8. How would a team need to be able to build temporary stoppings quickly and effectively?
 - A. The brattice should be cut to fit around the equipment, and the seal secured with loose material from the floor, shoveled onto the excess brattice along the floor and on the equipment
 - B. The brattice should be cut to fit around and over the equipment, and the seal secured with loose material from the floor, shoveled onto the excess brattice along the floor and excess cut off over the equipment
 - C. The brattice should be cut to fit around and over the equipment, and the seal secured with loose material from the floor, shoveled onto the excess brattice along the floor and on the equipment

9. Air locks are used by mine rescue teams?
 - A. To establish a Fresh Air Base
 - B. Before opening a barricade in good air behind which trapped miners may be located
 - C. To establish a Command Center

10. What equipment is a mine rescue team required to have?
 - A. In addition to the normal underground mining gear (i.e., hardhat, cap lamp, safety shoes, metal ID, and perhaps a watch), the team members wear breathing apparatus, and the team must have one detecting device (or multi-detector) for each gas they may encounter, and a communication system
 - B. In addition to the normal underground mining gear (i.e., hardhat, cap lamp, safety shoes, metal ID, and perhaps a watch), the team members wear breathing apparatus, and the team must have two detecting devices (or multi-detector) for each gas they may encounter, and a communication system
 - C. In addition to the normal underground mining gear (i.e., hardhat, cap lamp, safety shoes, metal ID, and perhaps a watch), the team members wear breathing apparatus, and the team must have two detecting devices (or multi-detector) for each gas they may encounter, and a two-way communication system

11. What team signals do you use during exploration?
 - A. One—advance, two—stop, three—retreat, four—emergency
 - B. One—stop, two—retreat, three—advance, four—emergency
 - C. One—stop, two—advance, three—retreat, four—emergency

12. Under what conditions/situations might your team captain order your team to return to fresh air immediately?
- A. Malfunctioning apparatus, hazardous roof that can be secured, presence of gases that produce an imminent explosion hazard, fire that cannot be extinguished, excessive water.
 - B. Malfunctioning apparatus, hazardous roof that cannot be secured, presence of gases that produce an imminent explosion hazard, fire that can be extinguished, excessive water.
 - C. Malfunctioning apparatus, hazardous roof that cannot be secured, presence of gases that produce an imminent explosion hazard, fire that cannot be extinguished, excessive water.
13. Why is recommended that the last intake and return seals be erected and closed simultaneously?
- A. It lessens the possibility of explosive gasses building up in the fire area
 - B. It increases the possibility of explosive gasses building up in the fire area
 - C. It lessens the possibility of non- explosive gasses building up in the fire area
14. What are the necessary factors that must be present in order for an explosion to occur?
- A. An accumulation of gas within its explosive range (fuel); insufficient oxygen; and A source of ignition (heat)
 - B. An accumulation of gas within its explosive range (fuel); Sufficient oxygen; and A source of ignition (heat)
 - C. An accumulation of gas over its explosive range (fuel); Sufficient oxygen; and A source of ignition (heat)
15. Discuss how a mine rescue team could remove standing water from an unventilated area.
- A. If gas conditions permit, the team can pump the water using nonconducting suction lines and a pump set up in fresh air. Careful tests should be made of the gas conditions before beginning the operation. Water soluble gases would be pumped out along with the water. And, if the line loses suction, toxic or explosive gases from the contaminated atmosphere could be drawn out.
 - B. If gas conditions permit, the team can pump the water using steel suction lines and a pump set up in fresh air. Careful tests should be made of the gas conditions before beginning the operation. Water soluble gases would be pumped out along with the water. And, if the line loses suction, toxic or explosive gases from the contaminated atmosphere could be drawn out.
 - C. If gas conditions permit, the team can pump the water using stainless steel suction lines and a pump set up in fresh air. Careful tests should be made of the gas conditions before beginning the operation. Water soluble gases would be pumped out along with the water. And, if the line loses suction, toxic or explosive gases from the contaminated atmosphere could be drawn out.