**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Company\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Team Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Contest Position No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Team Member No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Directions: Circle the letter preceding the correct answer to each of the following questions. Circle only one answer per question.**

1. The Command Center is the hub of rescue and recovery operations and is typically staffed and controlled by a mine emergency “command group.” This group is generally comprised of:

A. mine management personnel

B. Federal and state officials

1. Union representatives
2. All of the above
3. Federal regulations require mines to have and post a Mine Rescue Notification Plan for notifying all the mine rescue team members that will be needed to assist in the rescue and recovery operation. This regulation is:

1. 30 CFR Section 49.9
2. 30 CFR Section 50.2
3. Section 7(3) of the MINER Act of 2006
4. 30 CFR Section 46.6(a)
5. Incoming traffic on the roads leading to the mine property should also be regulated by authorized personnel to keep unnecessary vehicles off the roads so that they can remain open for needed personnel, supplies, and emergency vehicles.

 A. True B. False

4. A notification plan is a schedule that establishes a clear order of team usage

 during a rescue and recovery operation.

 A. True B. False

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

6 . An increase in pressure causes a gas to expand.

1. True B. False

7. The rate of \_\_\_\_\_\_\_\_\_is how quickly the gas will mix or

blend with one or more other gases and how quickly it can be dispersed.

 A. temperature rise

 B. current

 C. pressure increase

 D. diffusion

8. The explosive range of hydrogen is 3.0 to 64.3 percent in the presence of normal air.

1. True B. False

9. Specific gravity indicates how quickly a gas will diffuse and how easily it can be dispersed.

1. True B. False

10. Hydrogen is such a heavy gas; making it difficult to disperse because it does not diffuse rapidly.

1. True B. False

11. The TLV for carbon monoxide is 50 ppm. This is equivalent to

\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A. 50%

B. 0.05%

C. 5.0%

D. 0.005%

12. For a flammable gas that is present in mining, if there is no oxygen present there cannot be an explosion.

A. True B. False

13. What is the specific gravity of oxygen?

A. 1.0000

B. 1.2010

C. 1.1054

D. 1.1030

14. Although an asphyxiant, nitrogen is considered nontoxic.

A. True B. False

15. What is the second largest component of air?

A. Nitrogen

B. Oxygen

C. Argon

D. Helium

16. An elevated nitrogen content indicates an oxygen-rich

atmosphere.

A. True B. False

17. Although carbon dioxide is both colorless and odorless at high concentrations it may produce an acid taste.

 A. True B. False

18. The presence of NO2 above normal ambient levels for a

continued period of time definitely indicates there is a fire somewhere in the mine.

 A. True B. False

19. The toxicity of hydrogen is its most hazardous aspect.

 A. True B. False

20. What gas is often liberated when acid mine water corrodes metallic sulfides..

1. carbon monoxide
2. nitrogen
3. arsine
4. hydrogen sulfide

21. Sulfur dioxide has a low specific gravity.

 A. True B. False

22. Traffic cones are used to direct air to where it is needed and to keep intake air from short circuiting to the exhaust before it reaches the working area.

A. True B. False

23. A bulkhead is basically a brattice cloth, canvas, or plastic

curtain that is hung across a passageway and opens to allow miners and equipment to pass through.

A. True B. False

24. There are three reasons for the team check: 1. To make sure each team member is fit and ready to continue.; 2. To give the team a chance to rest. What is the 3rd reason?

1. To allow the captain time to review the mine map;
2. To make sure each team member’s apparatus is functioning properly;
3. To meet the Mine Manager prior to entry;
4. None of the above.

25. When using a horn as the team signaling device, what does two horn signals mean?

1. Advance – move toward captain
2. Stop
3. Retreat
4. Distress or emergency

26. During mine rescue if explosive concentrations of gas are detected in the exhaust air of the fire, what is the first step?

1. Immediately verify the concentrations with a second digital instrument
2. Quickly reverse the fans
3. Teams and any other underground personnel should leave the mine immediately**.**
4. None of the above.

27. When sealing a mine fire, the only way to keep the air flowing over the fire area is to leave one intake airway and one exhaust airway unsealed while other airways are being sealed.

A. True B. False

28. A Class D fire involves non-combustible metals.

A. True B. False

29. When \_\_\_\_\_\_\_\_\_\_\_\_\_ is the ventilation method of recovery being used, be sure that all unnecessary personnel are out of the mine before air is actually directed into the sealed area.

A. direct ventilation

 B. progressive ventilation

30. Gas detectors must measure concentrations of methane from 0.0 percent to

50 percent of volume, oxygen from 0.0 percent to at least 20 percent of volume, and carbon monoxide from 0.0 parts per million to at least 9,999 parts per million.

A. True B. False