**Missouri Mine Rescue Contest**

**Rolla, MO**

**October 3 – October 6, 2016**

**Written Test – Tech (BG4)**

1. The purpose of an airlock is to separate two different atmospheres while still permitting miners to enter and exit without mixing the atmosphere.
2. True (Module 3-23)
3. False
4. Under normal circumstances permanent bulkheads would be constructed in good air, so they could be built by mine rescue teams rather than barefaced work crews.
5. True
6. False (Module 3-23)
7. \_\_\_\_\_\_ are spring loaded expandable metal rods that can be used instead of posts to erect temporary bulkheads.

A. Posts

B. Roof Jacks

C. Pogo Sticks (Module 3-22)

D. None of the above

1. A regular anemometer is used to determine air velocities from 120 to 2,000 feet per minute.

A. True (Module 3-21)

B. False

1. If the anemometer reading is take for less than a minute, the velocity reading will have to be converted to \_\_\_\_\_\_\_\_\_.
2. cubic yard per minute
3. feet per second
4. feet per minute (Module 3-17)
5. The specific gravity of Oxygen is 1.1054.

A. True (Module 2-13)

B. False

1. Chemical analysis cannot detect oxygen deficiency.
2. True
3. False (Module 2-14)
4. Since your self-contained breathing apparatus supplies you with oxygen, it will protect you from all gases.
5. True
6. False (Module 2-10)
7. Asphyxiate means to suffocate or choke.
8. True (Module 2-10)
9. False
10. Of course you can rely on only your senses to positively identify a gas.
11. True
12. False (Module 2-8)
13. The sentinel electronic monitoring system comprises a sensor unit, switch box, and \_\_\_\_\_.
14. Battery
15. Circuit protector
16. None of the above (PSS Manual page 3)
17. A positive pressure in the breathing circuit prevents ambient oxygen from entering the system.
18. True
19. False (PSS Manual page 3)
20. The BG 4 is NIOSH/MSHA approved.

A. True (PSS Manual page 3)

B. False

1. If the speech diaphragm is deformed or shows signs of damage, it must be replaced.
2. True (PSS Manual page 10)
3. False
4. Ultrasonic cleaning is the only acceptable method of orifice service.
   * 1. True (PSS Manual page 13)
     2. False
5. All parts must be cleaned in lukewarm water in an organic solvent.
   1. True
   2. False (PSS Manual page 16)
6. The maximum charging pressure for the Oxygen Cylinder is \_\_\_\_\_\_.
   1. 3130 psi/198 bar
   2. 3135 psi/200 bar (PSS Manual page 17)
   3. No maximum
7. After inserting the relief valve, turn the valve 90 degrees to the left to lock.
   1. True
   2. False (PSS Manual page 20)
8. When checking the inhalation valve after tightly pinching the inhalation hose, start pumping slowly until 10 mbar is indicated on the pressure gauge.
   1. True
   2. False (PSS Manual page 25)
9. On activation and deactivation the Sentinel automatically checks and displays the battery capacity.
   1. True (PSS Manual page 32)
   2. False
10. Industrial Scientific recommends the “3& 3 Sampling Rule” when sampling with a motorized pump and tubing.
    1. True
    2. False (Page 5)
11. High off-scale readings may indicate explosive concentration.
    1. True (Page 4)
    2. False
12. After calibration, the MX6 ibrid will automatically reset peak measurements.
    1. True
    2. False (Page 11-12)
13. The sensor readings are displayed as solid black numerals during operations and alarm conditions.
    1. True
    2. False (Page 17)
14. The measurement range of a carbon dioxide IR sensor properly installed in an MX6 ibrid unit is \_\_\_\_\_ % to \_\_\_\_\_\_ %.
    1. 0 to 1
    2. 0 to 5 (Page 38)
    3. 0 to 50
15. Unless specified otherwise, configuration-mode display screens time out after \_\_\_\_ seconds. When activated, the main configuration screen remains on for \_\_\_\_\_ minutes.
    1. 60, 5
    2. 90, 5 (Page 32)
    3. 120, 10
16. The certification marking for MSHA is.
    1. CFR 30, Part 22, Class1
    2. CFR 30, Part 22, Class2
    3. CFR 30, Part 22, Methane-air Mixture (Page 2)
17. During a bump test of the MX6 ibrid, the sensor must reach a gas reading of \_\_\_% or greater of the applied gas (calibration) concentration within 60 seconds to pass.
    1. 25
    2. 30
    3. 50 (Page 36)
18. With an extended range Li-ion battery pack with an MX6 ibrid pump the typical run time is \_\_\_\_ hours.
    1. 5
    2. 15
    3. 20 (Page 37)
19. If the battery life remaining is less than \_\_\_ minutes, the battery icon flashes on the display and audible battery low alarm.
    1. 15
    2. 30
    3. 45
    4. 60 (Page 33)