

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.
 - A. True (Module 3-23)
 - B. False
2. 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.
 - A. True
 - B. False (Module 3-23)
3. _____ 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
4. A regular anemometer is used to determine air velocities from 120 to 2,000 feet per minute.
 - A. True (Module 3-21)
 - B. False
5. If the anemometer reading is take for less than a minute, the velocity reading will have to be converted to _____.
 - A. cubic yard per minute
 - B. feet per second
 - C. feet per minute (Module 3-17)
6. The specific gravity of Oxygen is 1.1054.
 - A. True (Module 2-13)
 - B. False
7. Chemical analysis cannot detect oxygen deficiency.
 - A. True
 - B. False (Module 2-14)
8. Since your self-contained breathing apparatus supplies you with oxygen, it will protect you from all gases.
 - A. True
 - B. False (Module 2-10)
9. Asphyxiate means to suffocate or choke.
 - A. True (Module 2-10)
 - B. False
10. Of course you can rely on only your senses to positively identify a gas.
 - A. True
 - B. False (Module 2-8)

11. The sentinel electronic monitoring system comprises a sensor unit, switch box, and _____.
 - A. Battery
 - B. Circuit protector
 - C. None of the above (PSS Manual page 3)
12. A positive pressure in the breathing circuit prevents ambient oxygen from entering the system.
 - A. True
 - B. False (PSS Manual page 3)
13. The BG 4 is NIOSH/MSHA approved.
 - A. True (PSS Manual page 3)
 - B. False
14. If the speech diaphragm is deformed or shows signs of damage, it must be replaced.
 - A. True (PSS Manual page 10)
 - B. False
15. Ultrasonic cleaning is the only acceptable method of orifice service.
 - A. True (PSS Manual page 13)
 - B. False
16. All parts must be cleaned in lukewarm water in an organic solvent.
 - A. True
 - B. False (PSS Manual page 16)
17. The maximum charging pressure for the Oxygen Cylinder is _____.
 - A. 3130 psi/198 bar
 - B. 3135 psi/200 bar (PSS Manual page 17)
 - C. No maximum
18. After inserting the relief valve, turn the valve 90 degrees to the left to lock.
 - A. True
 - B. False (PSS Manual page 20)
19. When checking the inhalation valve after tightly pinching the inhalation hose, start pumping slowly until 10 mbar is indicated on the pressure gauge.
 - A. True
 - B. False (PSS Manual page 25)
20. On activation and deactivation the Sentinel automatically checks and displays the battery capacity.
 - A. True (PSS Manual page 32)
 - B. False
21. Industrial Scientific recommends the “3& 3 Sampling Rule” when sampling with a motorized pump and tubing.
 - A. True
 - B. False (Page 5)

22. High off-scale readings may indicate explosive concentration.
- A. True (Page 4)
 - B. False
23. After calibration, the MX6 ibrid will automatically reset peak measurements.
- A. True
 - B. False (Page 11-12)
24. The sensor readings are displayed as solid black numerals during operations and alarm conditions.
- A. True
 - B. False (Page 17)
25. The measurement range of a carbon dioxide IR sensor properly installed in an MX6 ibrid unit is _____ % to _____ %.
- A. 0 to 1
 - B. 0 to 5 (Page 38)
 - C. 0 to 50
26. Unless specified otherwise, configuration-mode display screens time out after _____ seconds. When activated, the main configuration screen remains on for _____ minutes.
- A. 60, 5
 - B. 90, 5 (Page 32)
 - C. 120, 10
27. The certification marking for MSHA is.
- A. CFR 30, Part 22, Class1
 - B. CFR 30, Part 22, Class2
 - C. CFR 30, Part 22, Methane-air Mixture (Page 2)
28. 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.
- A. 25
 - B. 30
 - C. 50 (Page 36)
29. With an extended range Li-ion battery pack with an MX6 ibrid pump the typical run time is _____ hours.
- A. 5
 - B. 15
 - C. 20 (Page 37)
30. If the battery life remaining is less than _____ minutes, the battery icon flashes on the display and audible battery low alarm.
- A. 15
 - B. 30
 - C. 45
 - D. 60 (Page 33)