

**Southwest Regional Mine Rescue Contest 2012**  
**Carlsbad, NM**  
**BG4-Technician Team Written Test**

1. The speech diaphragm is a thin foil?  
A True                      B False
  
2. High medium pressure can cause low dosage ?  
A True                      B False
  
3. Bypass system damaged can cause high dosage ?  
A True                      B False
  
4. The tester should be on negative pressure to conduct the function test for the low pressure warning.  
A True                      B False
  
5. The exhalation valve test is done with the tester set on Negative pressure ?  
A True                      B. False
  
6. The minimum valve should open at a value between 1.0 and 2 mbar .  
A True                      B False
  
7. Test is incorrect while testing the minimum valve can be caused by  
A. cylinder valve not opened  
B. Spring pressure is incorrect  
C. Tilt valve defective  
D. All the above
  
8. Positive pressure is used to check the mask for leaks, using the mask test bladder and adaptor?  
A True                      B False
  
9. O-ring on plug in coupling should be replaced every 6 years ?  
A True                      B False
  
10. Excessive disinfectant concentrations and over long disinfecting times can damage the mask ?  
A True                      B. False

From MSHA Publication 3027 Module 2 Mine Gases

11. A gas is a substance with neither a definite shape nor volume.
  - A. True
  - B. False
  
12. An increase in pressure causes a gas to contract.
  - A. True
  - B. False
  
13. An increase in temperature causes a gas to expand.
  - A. True
  - B. False
  
14. Pressure exerted on a gas is \_\_\_\_\_ atmospheric pressure.
  - a. never
  - b. always
  - c. usually
  
15. The rate of diffusion is greatly decreased by higher velocities of air currents
  - a. True
  - b. False

From MSHA Publication 3027 Module 3 Ventilation

16. Blower fans are used mostly in mines having:
  - a. excessive overburden
  - b. no overburden
  - c. little overburden
  
17. Urethane foam is \_\_\_\_\_ used by rescue teams for sealing the edges of a temporary bulkhead to make it more airtight.
  - a. always
  - b. sometimes
  - c. never
  
18. Mine doors should \_\_\_\_\_ be closed after you pass through them.
  - a. never
  - b. occasionally
  - c. always

19. A regulator can be made by knocking blocks out of a permanent bulkhead.
- A. True
  - B. False
20. Mine rescue teams have the latitude to alter ventilation without direct orders from the command center
- a. True
  - b. False

From MX6 iBrid Manual Rev 3 and iTX Manual Rev 6

21. Oxygen deficient atmospheres may cause readings of combustible (methane) gas to be \_\_\_\_\_ than actual concentrations.
- A. higher
  - B. the same
  - C. lower
22. Silicone compound vapors may cause readings of combustible (methane) gas to be \_\_\_\_\_ than actual gas concentrations.
- A. higher
  - B. the same
  - C. lower
23. Obstruction of the gas sensor aperture areas and/or contamination of the water barriers may cause readings to be \_\_\_\_\_ than actual gas concentrations.
- A. higher
  - B. the same
  - C. lower
24. Sudden changes in atmospheric pressure may cause temporary fluctuations in the \_\_\_\_\_ reading.
- A. carbon monoxide
  - B. methane
  - C. nitrogen dioxide
  - D. oxygen
  - E. all of the above
25. A functional (bump) test is defined as a brief exposure of the monitor to a known concentration of gas(es) for the purpose of verifying sensor and alarm operation and to measure the accuracy of the instrument.
- A. True
  - B. False

26. The calibration of the combustible gas sensor should be verified after any incident where the combustible gas content has caused the instrument to display an over range condition.

- A. True
- B. False

27. If an instrument fails to operate properly following any functional bump test:

- A. the batteries should immediately be replaced
- B. the instrument should immediately sent back to the manufacturer for repair
- C. all sensors should be replaced
- D. a full instrument calibration should be performed prior to use

28. According to the manufacturer's recommendation, how often should a functional “bump” test be performed on a gas instrument?

- A. Before each day’s use
- B. When the gas instrument shows a noticeable loss of sensor sensitivity
- C. Once a week
- D. Once a month

29. According to the gas instrument's manual, the recommended flow rate for calibration is 1.5 liter per minute (LPM).

- A. True
- B. False

30. Substitution of iTX or MX6 iBrid components may impair the intrinsic safety of these instruments and may cause an unsafe condition.

- A. True
- B. False