

BG4 TECHNICIAN TEAM WRITTEN TEST
Southwestern Regional Mine Rescue Contest
Industrial Scientific Corporation Gas Instruments: iTX and MX6
Ruidoso, New Mexico - 2011

1. Repair and general overhaul of the apparatus may only be carried out by Draeger personnel.
 - a. True
 - b. False

2. The breathing air is enriched with oxygen from the O2 cylinder
 - via the constant metering valve in the case of high breathing rates and
 - via the minimum valve or a manually operated bypass valve in the case of low breathing rates. (p. 3)
 - a. True
 - b. False

3. Before the breathing air is inhaled again, it flows through the regenerative canister. When it is filled with ice the temperature of the exhaled air is lowered, thus reducing the physical strain on the user.
 - a. True
 - b. False

4. Only use the corresponding respirator mask Panorama Nova-EPDN/Silicone.
 - a. True
 - b. False

5. The Monitron, meets the explosion-proof standards to EEx ia 11c T4 and EEx ia 1 and approved for use in gaseous mines by MSHA (appr. No.2G-3985-0) (p. 3)
 - a. True
 - b. False

6. The factory packed CO2 absorber must be checked before being filled and may only be used if:
Ports 1-3 are tightly sealed with plugs and used by date on the label has not yet expired. (p. 4)
 - a. True
 - b. False

7. Operation without the ice pack is also permitted below 32 F .

- a. True
- b. False

8. Fill the ice receptacle with water up to 50mm (2inches) from the rim. Leave to freeze completely at approx.-15C for at least 16 hours in a deep freezer.

- a. True
- b. False

9. If a fault is found during the high pressure leak test: Alarm sounds 3 times, Red indicator flashes 30 seconds, Err is displayed for 30 seconds.

- a. True
- b. False

10. Always set out in groups with at least 2 people wearing apparatus.

- a. True
- b. False

11. What can be determined by the specific gravity of a gas?

- A. Where the gas will stratify in still air.
- B. Determines the explosive range of the gas.
- C. How easily the gas will diffuse.
- D. A and C
- E. All of the above

12. What does the presence of sulfur dioxide indicate?

- A. Inadequate ventilation around battery charging station
- B. Burning of diesel fuel
- C. A sulfide ore dust explosion has occurred
- D. B and C
- E. All of the above

13. Atmospheric pressure does not affect the diffusion rate of a gas.

- A. True
- B. False

14. It is much easier for concentrations of explosive gases to build up when the barometric pressure is high.

- A. True
- B. False

15. Smoke is not normally considered to be an asphyxiate.

- A. True
- B. False

16. Before changes are made to the ventilation system, the Command Center should consider _____.

- A. Stopping the main fan before making changes
- B. How alterations will affect ventilation in the unexplored area
- C. Wrong alterations could cause changes in the air at the fresh air base
- D. B and C
- E. All of the above

17. Using smoke cloud method, what is the air velocity when the smoke cloud travels a measured distance of 30 feet in 15 seconds?

- A. 120 ft./min
- B. 125 ft./min.
- C. 130 ft./min.
- D. 135 ft./min

18. Porous stopping's such as concrete block stoppings are usually plastered on the low-pressure side.

- A. True
- B. False

19. During exploration of the mine, [a mine rescue team's] initial responsibility will be to repair any damaged or destroyed ventilation controls.

- A. True
- B. False

20. To obtain the “flow” of air through a mine there must be a difference in air velocity between the intakes and exhaust airways.
- A. True
 - B. False
21. For the purposes of contest work, no barricade will be entered without ventilating in front of the barricade if _____
- A. Hydrogen Sulfide (H_2S) exceeds 0.01%
 - B. Nitrogen Dioxide (NO_2) exceeds 0.002%
 - C. Carbon Monoxide (CO) exceeds 0.12%
 - D. A and C
 - E. All of the above
22. Before making changes to ventilation, the team must _____.
- A. exit the affected area
 - B. conduct an apparatus check
 - C. inform the official in charge
 - D. none of the above
23. Which of the statements are correct regarding the acceptable limits for the gas box test?
- A. Oxygen within plus 1.0% by volume
 - B. Carbon Monoxide within plus or minus 20% of actual reading
 - C. Nitrogen Dioxide within plus or minus 5% of actual reading
 - D. All of the above
24. All over-range conditions will clear automatically when the gas concentration has decreased to a level within the display range of the gas instrument in non-latching mode.
- A. True
 - B. False
25. The Peak Reading screen will display the highest toxic, explosive and oxygen gas concentrations since the peak reading was last cleared.
- A. True
 - B. False

26. Catalytic diffusion sensors are used for detecting combustible gases.

- A. True
- B. False

27. Explosive gas reading can be configured to read in _____.

- A. Percent by volume
- B. Parts per million (PPM)
- C. Percent of lower explosive limit (LEL)
- D. A and C
- E. All of the above

28. The real time operation screen can be made to display _____.

- A. Gas concentrations for sensors installed
- B. Data logging configuration
- C. Battery status
- D. A and C
- E. All of the above

29. Electrochemical sensors are used for detecting

- A. Combustible gases
- B. Toxic Gases
- C. Oxygen
- D. B and C
- E. All of the above

30. It takes _____ to get 90% sensor response time for an electrochemical sensor on the typical response curve.

- A. 5 seconds
- B. 15 seconds
- C. 30 seconds
- D. 60 seconds

