

BioPak

2016 Caryville TN

Tech Team Written Test

MSHA Publication 3027 (formerly IG 6—Instructor's Manual for Mine Rescue Training) Module 2—Mine Gases and Module 3—Ventilation, BioPak 240R User Instructions, MX6 iBrid Multigas Monitor Operation Guide—Revision 9

Team Member Name _____

Team Name _____ Company Name _____

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

1. _____ is a mixture of carbon monoxide and air which results from a mine fire.
 - A. Afterdamp
 - B. Stinkdamp
 - C. Whitedamp
 - D. Blackdamp
2. Specific gravity of Acetylene _____
 - A. 0.9672
 - B. 0.9677
 - C. 0.9107
 - D. 0.9117
3. A partially opened mine door can be used as a regulator
 - A. True
 - B. False
4. The smoke tube is used to measure medium-and high-velocity air movement and anemometer is used mainly to determine what direction very slow-moving air is moving

- A. True
 - B. False
5. Temporary bulkheads built in a passageway should be placed at least 4 to 6 feet into the passageway in order that
- A. Sufficient space is available to construct a permanent bulkhead
 - B. It will be protected from further explosions
 - C. It will not be affected by fire if a fire should spread to that passageway
 - D. None of the above
6. Explosive range and flammability of Propane from
- A. 2.12 to 9.35 percent in normal air
 - B. 2.32 to 9.35 percent in normal air
 - C. 2.12 to 9.55 percent in normal air
 - D. 2.32 to 9.55 percent in normal air
7. Specific gravity of Carbon Dioxide
- A. 1.5894
 - B. 1.5299
 - C. 1.5984
 - D. 1.5291
8. The traverse method is used when
- A. Erecting a temporary bulkhead
 - B. Taking a reading with a smoke tube
 - C. Taking a reading with an anemometer
 - D. None of the above
9. In general, cold air displaces warm air in the mine due to the differences in elevation and in temperature of the workings
- A. True
 - B. False
10. Which of the following statements is false
- A. An increase in temperature makes a gas diffuse more rapidly
 - B. A decrease in temperature slows down the rate of diffusion
 - C. An increase in pressure slows down the rate of diffusion
 - D. A decrease in pressure slows it down

11. Industrial Scientific recommends a minimum procedure frequency of one week for performing a bump test on an MX6 ibrid.
- A. True
 - B. False
12. A bump test proves that installed sensors are measuring accurately.
- A. True
 - B. False
13. A configuration menu is indicated by a yellow background on the LCD screen.
- A. True
 - B. False
14. The typical T90 response time for a Hydrogen (H₂) sensor is 60 seconds.
- A. True
 - B. False
15. If the instrument is still reading gas while in the configuration mode, and there is an alarm, the user must manually return to the gas-monitoring screen.
- A. True
 - B. False
16. Zero air must be applied to zero which type of sensor?
- A. NO₂
 - B. NO
 - C. H₂S
 - D. CO₂
17. During calibration, the appropriate calibration gas should be applied at a flow rate of ____ lpm.
- A. 0.5
 - B. 1.0
 - C. 1.5
 - D. 2
18. Passwords are a minimum of ____ characters and a maximum of ____.
- A. 3, 8
 - B. 4, 10

- C. 3, 10
- D. 4, 8

19. On the gas-monitoring display screen, the sensor types are displayed as _____ text during normal operation, and _____ text during alarm conditions.

- A. Solid black, blinking red
- B. Solid black, solid red
- C. Solid black, blinking black
- D. Blinking black, blinking red

20. What is the expected typical run time for a fully charged MX6 ibrid with an extended range Li-ion battery, without pump, and CO, O₂, LEL (catalytic), and H₂S sensors installed?

- A. 36 hrs.
- B. 24 hrs.
- C. 20 hrs.
- D. 12 hrs.

21. MSHA requires Periodic Maintenance should be performed at least ____ on Mine Rescue Breathing Apparatus.

- A. Weekly
- B. Quarterly
- C. Every 30 days

22. Closed Circuit Breathing Apparatus Oxygen cylinders must be hydrostatically tested every _____.

- A. One Year
- B. Three Years
- C. Five Years

23. In a properly working positive pressure NIOSH/MSHA approved Closed Circuit breathing apparatus the pressure inside the breathing loop/circuit is:

- A. Lower than ambient
- B. The same as ambient
- C. Slightly higher than ambient

24. If a slight leak occurs in the breathing circuit or facemask seal, the user generally will:
- A. Hit the demand valve more often
 - B. Reduce duration
 - C. All of the above
25. Turn-around Maintenance should be performed
- A. As soon as possible after each use
 - B. On a monthly basis
 - C. During periodic maintenance
26. There are various methods to eliminate or reduce mask fogging. Which method is the least likely to work:
- A. Depress the Emergency By-Pass Valve
 - B. Use an approved wiper
 - C. Use an approved anti-fog spray or solution
27. When completing washing/disinfection during turn-around maintenance users may use any antibacterial cleaner they choose because
- A. Bleach works on any germ so I can use it
 - B. Alcohol is used in hospitals so I can use it
 - C. None of the above
28. My Mine Rescue Closed Circuit Breathing Apparatus uses _____ in the cylinder because:
- A. Breathing Air
 - B. Compressed Air
 - C. Medical Grade Oxygen
29. Under extremely heavy work conditions, if the user inhales and collapses the breathing bag or diaphragm as far as it can travel, it activates the
- A. By-Pass Valve
 - B. Demand Valve
 - C. Relief Valve
30. If either or both the constant add or the demand valve fails in your apparatus, the user can still manually fill the breathing chamber by activating the
- A. Emergency By-Pass Valve
 - B. Demand/Minimum Valve
 - C. Relief Valve

Answer Sheets
are where to
find answers

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1. _____ is a mixture of carbon monoxide and air which results from a mine fire.
 - A. Afterdamp
 - B. Stinkdamp
 - C. Whitedamp—Module 2 page 2-26
 - D. Blackdamp
2. Specific gravity of Acetylene _____
 - A. 0.9672
 - B. 0.9677
 - C. 0.9107—Module 2 page 2-24
 - D. 0.9117
3. A partially opened mine door can be used as a regulator
 - A. True—Module 3 page 3-12
 - B. False
4. The smoke tube is used to measure medium-and high-velocity air movement and anemometer is used mainly to determine what direction very slow-moving air is moving

- A. True
 - B. False—Module 3 page 3-16
5. Temporary bulkheads built in a passageway should be placed at least 4 to 6 feet into the passageway in order that
- A. Sufficient space is available to construct a permanent bulkhead—Module 3 page 3-22
 - B. It will be protected from further explosions
 - C. It will not be affected by fire if a fire should spread to that passageway
 - D. None of the above
6. Explosive range and flammability of Propane from
- A. 2.12 to 9.35 percent in normal air—Module 2 page 2-23
 - B. 2.32 to 9.35 percent in normal air
 - C. 2.12 to 9.55 percent in normal air
 - D. 2.32 to 9.55 percent in normal air
7. Specific gravity of Carbon Dioxide
- A. 1.5894
 - B. 1.5299
 - C. 1.5984
 - D. 1.5291—Module 2 page 2-15
8. The traverse method is used when
- A. Erecting a temporary bulkhead
 - B. Taking a reading with a smoke tube
 - C. Taking a reading with an anemometer—Module 3 page 3-17
 - D. None of the above
9. In general, cold air displaces warm air in the mine due to the differences in elevation and in temperature of the workings
- A. True
 - B. False—Module 3 page 3-5
10. Which of the following statements is false
- A. An increase in temperature makes a gas diffuse more rapidly
 - B. A decrease in temperature slows down the rate of diffusion
 - C. An increase in pressure slows down the rate of diffusion

D. A decrease in pressure slows it down—Module 2 page 2-7

11. Industrial Scientific recommends a minimum procedure frequency of one week for performing a bump test on an MX6 ibrid.

A. True

B. False MX6 iBird Manual Revision 9 Page 12

12. A bump test proves that installed sensors are measuring accurately.

A. True

B. False MX6 iBird Manual Revision 9 Page 11

13. A configuration menu is indicated by a yellow background on the LCD screen.

A. True MX6 iBird Manual Revision 9 Page 7

B. False

14. The typical T90 response time for a Hydrogen (H_2) sensor is 60 seconds.

A. True

B. False MX6 iBird Manual Revision 9 Page 39

15. If the instrument is still reading gas while in the configuration mode, and there is an alarm, the user must manually return to the gas-monitoring screen.

A. True

B. False MX6 iBird Manual Revision 9 Page 32

16. Zero air must be applied to zero which type of sensor?

A. NO_2

B. NO

C. H_2S

D. CO_2 MX6 iBird Manual Revision 9 Page 34

17. During calibration, the appropriate calibration gas should be applied at a flow rate of ____ lpm.

A. 0.5 MX6 iBird Manual Revision 9 Page 35

B. 1.0

C. 1.5

D. 2

18. Passwords are a minimum of ____ characters and a maximum of ____.
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 - B. 4, 10
 - C. 3, 10
 - D. 4, 8
19. On the gas-monitoring display screen, the sensor types are displayed as _____ text during normal operation, and _____ text during alarm conditions.
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- A. By-Pass Valve
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- C. Relief Valve

30. If either or both the constant add or the demand valve fails in your apparatus, the user can still manually fill the breathing chamber by activating the

- A. Emergency By-Pass Valve
- B. Demand/Minimum Valve
- C. Relief Valve

Answer-
Sheets

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Answer Sheet

1. C
2. C
3. A
4. B
5. A
6. A
7. D
8. C
9. B
10. D
11. B
12. B
13. A
14. B
15. B
16. D
17. A
18. C
19. C
20. A
21. C

- 22. C
- 23. C
- 24. C
- 25. A
- 26. A
- 27. C
- 28. C
- 29. B
- 30. A