

**Southwest Wyoming Mutual Aid Mine Rescue Contest  
Rock Springs WY  
June 10-12, 2014**

**MX6 iBrid Technician Team Test**

Company Name \_\_\_\_\_

Team Name \_\_\_\_\_

Name \_\_\_\_\_

1. MSHA requires mine rescue stations serving underground M/NM mines to have six gas detectors appropriate for each gas which may be encountered at the mines served.

- a) True
- b) False

2. In addition, gas detectors must measure concentrations of methane from 0.0 percent to 100 percent of volume, oxygen from 0.0 percent to at least 20 percent of volume, and carbon monoxide from 0.0 parts per million to at least 9,999 parts per million.

- a) True
- b) False

3. The volume of a gas changes in response to any change in atmospheric pressure or temperature. For example: An increase in temperature causes a gas to contract.

- a) True
- b) False

4. The specific gravity of normal air is \_\_\_\_\_?

- a) 1.5
- b) 2.0
- c) 1.0
- d) 1.5

5. Sulfur dioxide, for example, has a specific gravity of 2.2638.
- a) 2.2635
  - b) 2.2638
  - c) 2.2538
  - d) 2.3838
6. The explosive range of hydrogen, for example, is \_\_\_ to \_\_\_ percent in the presence of normal air.
- a) 3.0 to 75.2
  - b) 5.0 to 76.3
  - c) 4.0 to 72.2
  - d) 4.0 to 74.2
7. In order to get the air to flow from the intake to the exhaust, the exhaust air must be at a higher pressure than the intake.
- a) True
  - b) False
8. Bulkheads are used to direct air to where it is needed and to keep intake air from short circuiting to the exhaust before it reaches the working area.
- a) True
  - b) False
9. Check curtains are used to deflect the exhaust air current into a working area.
- a) True
  - b) False
10. Any teams working beyond the established time period will be notified by the #2 Judge that they must leave the field.
- a) True
  - b) False
11. Silicone compound vapors or other known contaminants may affect the combustible gas sensor and cause readings of combustible gas to be lower than actual gas concentrations.
- a) True
  - b) False

12. Oxygen deficient atmospheres may cause combustible gas readings to be higher than actual concentrations.

- a) True
- b) False

13. Obstruction of the sensor openings or contamination of the water barriers may cause readings to be lower than actual gas concentrations.

- a) True
- b) False

14. Industrial Scientific recommends the "2 & 2 Sampling Rule" when sampling with a motorized pump and tubing, allow for 2 minutes plus 2 seconds per foot of tubing used, prior to noting the monitor readings.

- a) True
- b) False

15. The lithium-ion cells are \_\_\_\_\_-replaceable.

- a) recommended
- b) not user
- c) not required
- d) None of the above

16. When calibrated using methane concentrations less than \_\_\_% of volume, reading accuracy of the infrared methane sensor may not be guaranteed to be better than +/-20%.

- a) 10
- b) 3
- c) 5
- d) 4

17. There are two levels of audio gas alarms based on the frequency of the beeps and the length of delay between beeps. Low-level (level-1): Low frequency beeps with a short delay

- a) True
- b) False

18. The instrument has alarm LEDs located beneath the \_\_\_\_\_ sensor array at the top of the unit.

- a) oxygen
- b) opaque
- c) methane
- d) None of the above

19. \_\_\_\_\_ different cradles are available for use with the MX6 multigas monitor.

- a) Four
- b) Six
- c) Three
- d) None of above

20. The menu system consists of \_\_\_\_\_ different root menus.

- a) four
- b) two
- c) three
- d) None of the above

21. Fourteen alarm events for the instrument are recorded into a FIFO queue in nonvolatile memory and are time stamped.

- a) True
- b) False

22. Data logging is a feature that allows a variety of system parameters to be recorded at regular intervals (and saved internally) for retrieval (and viewing) at a later date. Data are not saved in case of power loss.

- a) True
- b) False

23. Bump testing checks for sensor and \_\_\_\_\_ functionality.

- a) ambient
- b) gas
- c) alarm
- d) unit

24. Zeroing sets each installed sensor to recognize the \_\_\_\_\_ air as clean Air.

- a) gassy
- b) sensed
- c) ambient
- d) None of the above

25. The MX6 multigas monitor (instrument) is powered by an alkaline or rechargeable Lithium-ion (Li-ion) battery.

- a) True
- b) False

26. ISC recommends that the monitor be fully charged using an ISC compatible charger or docking station; this may require up to \_\_\_\_\_ hours.

- a) six
- b) eight
- c) five
- d) twelve

27. The MX6 multigas monitor is a handheld, “dockable” instrument for personal protection with a four-way navigation button.

- a) True
- b) False

28. The sensor *readings* are displayed as solid black numerals during normal operation, and solid red numerals during alarm conditions.

- a) True
- b) False

29. The *operation-mode root menu* is the entry point to any feature. It is activated from the gas-monitoring display screen and has \_\_\_\_\_ menu *tabs*.

- a) four
- b) five
- c) six
- d) three

30. Passwords are a minimum of three characters and a maximum of 8.

- a) True
- b) False