

2023 Kansas Shoot-out Mine Rescue Competition
Hutchinson, Kansas
Written Test – Technician Team

Name: _____ Team: _____

- 1) A gas that is normally found near the roof or in high places in the mine is said to have a low
 - a) Level of Solubility.
 - b) Specific Gravity.
 - c) Level of toxicity.

- 2) The volume of a gas changes in response to any change in atmospheric pressure or _____.
 - a) Barometer reading.
 - b) Weather.
 - c) Temperature.

- 3) For mining applications, velocity is always measured in _____.
 - a) Feet per minute.
 - b) Feet per second.
 - c) Meters per minute.

- 4) The recommended calibration procedure on the MX6 iBird multi-gas detector should be:
 - a) Before each use.
 - b) Once a month.
 - c) Before each use and monthly thereafter.

- 5) To obtain the flow of air through the mine there must be a _____ in air pressure between the intake and return airways.
 - a) Equilibrium
 - b) Balance
 - c) Difference

- 6) The types and readings of all installed sensors of the MX6 iBird are displayed in _____.
 - a) Battery Status
 - b) Normal Operation Mode.
 - c) Startup Self-Test

- 7) A medium-velocity (or “regular”) anemometer is used for measuring velocities from 120 to _____ feet per minute.
- a) 2,000
 - b) 6,800
 - c) 4,000
- 8) Prior to each day’s use of the MX6 iBird Multi-gas Monitor, a bump test should be performed. If the instrument does not pass the bump test:
- a) Bump test again
 - b) A full calibration is recommended.
 - c) Send it to the manufacture.
- 9) Mine rescue teams erecting temporary stoppings/Bulkheads in atmosphere with elevated methane readings should:
- a) Leave a corner of the stopping/Bulkhead open for the methane to exit.
 - b) Mine Rescue teams should never enter such atmosphere.
 - c) Use non-sparking tools, nails, and spads.
- 10) An elevated concentration of nitrogen in mine air can be harmful because:
- a) It can lower the oxygen content of the air.
 - b) It is highly explosive.
 - c) It is highly toxic.
- 11) A mine rescue team should _____ make alterations without the approval of the command center.
- a) Sometimes
 - b) Never
 - c) Always
- 12) Methane is flammable, its explosive range is 5 to 15 percent when there is at least ____ percent oxygen.
- a) 10.8
 - b) 12.1
 - c) 7.8

- 13) The most likely source of ethane, propane, or butane in a mine is:
- a) Use of diesel equipment.
 - b) Battery charging stations.
 - c) Leakage from adjacent gas or oil wells.
- 14) Test locations for methane should be conducted _____.
- a) Near the center of openings.
 - b) In high areas near the roof.
 - c) In low areas near the floor.
- 15) Two instruments commonly used to measure velocity of airflow in a mine are:
- a) Smoke tube and an anemometer.
 - b) Smoke tube and CO detector.
 - c) High velocity and medium velocity anemometer.