

Rolla Mine Rescue and First Aid Competition

Mine Rescue Written Test – Answer Key

- 1) Characteristics of hydrogen sulfide include:
 - a. explosive
 - b. highly toxic
 - c. can be liberated from pools of stagnant water
 - d. all of the above

- 2) Dinner buckets encountered during exploration are important because:
 - a. They can contain food and/or water for the rescue team.
 - b. They may contain notes that would indicate the whereabouts of survivors.
 - c. They indicate where miners ate their dinner.
 - d. None of the above.

- 3) Carbon monoxide is:
 - a. gas found in all mining operations
 - b. a normal constituent of air
 - c. detected during a mine fire or explosion
 - d. a product of the breathing process

- 4) Two instruments commonly used to measure velocity of airflow in a mine are:
 - a. Flame safety lamp and smoke tube.
 - b. Smoke tube and CO detector.
 - c. Anemometer and flame safety lamp.
 - d. Smoke tube and anemometer.

- 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. All of the above.

- 6) Burning materials that give off extremely toxic gases in addition to carbon monoxide are:
- Timbers
 - Hydraulic fluids
 - Neoprene and other synthetic rubber compounds
 - All of the above
- 7) Mine rescue teams should alter existing ventilation:
- Only when directed to do so by the command center.
 - When the team captain decides to do so.
 - When they encounter high concentrations of carbon monoxide.
 - When they encounter smoke.
- 8) The preferred type of extinguisher for teams is a dry chemical type that contains:
- Sodium bicarbonate
 - Potassium chloride
 - Carbon tetrachloride
 - Monoammonium phosphate
- 9) In sealing a fire it is recommended that:
- Only permanent bulkheads be used
 - The last intake and last exhaust be sealed simultaneously
 - A single air sample tube be used
 - All of the above
- 10) Barefaced exploration should be attempted only when:
- No breathing apparatus is available.
 - Miners are trapped in the mine.
 - A backup mine rescue team with apparatus is immediately available.
 - A fresh air base is established
- 11) The captain should mark the date and his or her initials:
- Each time the team stops for a rest.
 - Every 50 feet.
 - Every 200 feet.
 - On all explored areas (crosscuts, impassable falls, barricades, bulkheads, air doors, etc.)

- 12) Prior to a mine rescue team passing through a door or bulkhead behind which conditions are not definitely known, they should:
- Ask the fresh air base to send in the backup team.
 - Erect an air lock to prevent the mixing of atmospheres.
 - Open the door or bulkhead and wait at least 10 minutes so that any harmful gases are diffused.
 - Never enter such areas.
- 13) Accumulations of hydrogen in the mine atmosphere are dangerous because hydrogen:
- is highly toxic
 - is highly soluble in water
 - is highly explosive
 - gives off a suffocating odor
- 14) During rescue team explorations, the main fan:
- Should be kept running.
 - Should be continually monitored.
 - Both of the above.
 - None of the above.
- 15) An area in the mine closed at both ends by doors or by bulkheads with flaps or doors in them. Used to prevent mixing of different atmospheres while allowing miners to enter and exit is a:
- Barricade
 - Refuge Chamber
 - Air Lock
 - None of the above
- 16) When using a dry chemical extinguisher, you should aim the stream of dry chemical:
- Directly at the flame
 - Directly at the smoke
 - About 6 inches ahead of the flame edge
 - About 12 inches ahead of the flame edge
- 17) Gas readings should be taken:
- At all intersections.
 - At any dead end.
 - At the furthest point of travel in any passageway.
 - All of the above.

- 18) If at all possible, entry into the mine should be made on:
- An exhaust airway.
 - An intake airway.
 - The main haulageway.
 - The belt entry.
- 19) Acetylene would normally be found in a mine atmosphere where:
- diesel equipment is used
 - methane has burned or exploded in air with a lowered oxygen content
 - leakage has occurred from adjacent oil or gas wells
 - battery charging stations are located
- 20) The traverse method is used when:
- Taking a reading with a smoke tube.
 - Taking a reading with an anemometer.
 - Erecting a temporary bulkhead.
 - None of the above
- 21) Air locks are used by mine rescue teams:
- To establish a fresh air base.
 - When opening a door or knocking out a bulkhead behind which conditions are not definitely known.
 - Before opening a barricade in bad air behind which trapped miners may be located.
 - All of the above.
- 22) Atmospheric pressure and temperature are important factors because they:
- affect the rate of diffusion of a gas by ventilation
 - can cause false readings on gas detection instruments
 - lower oxygen content in the mine
 - all of the above
- 23) Debriefings are held to:
- Inform news reporters of developments.
 - Inform family members of developments.
 - Review the rescue team's findings after they have returned from underground.
 - All of the above.

- 24) Gases that are neither toxic nor explosive:
- are not found in mine atmospheres
 - are not dangerous
 - can be dangerous because they can displace oxygen
 - cannot be detected with today's detection instruments
- 25) A gas that is normally found near the back or in high places in the mine is said to have a low:
- level of toxicity
 - level of explosivity
 - specific gravity
 - level of solubility
- 26) The most likely source of ethane, propane, or butane in a mine is:
- use of diesel equipment
 - battery charging stations
 - leakage from adjacent gas or oil wells
 - all of the above
- 27) Copper tubes or pipes are inserted in temporary and permanent bulkheads for the purpose of:
- Checking for smoke
 - Bleeding off excess pressure from the sealed area
 - Collecting air samples from the sealed area
 - Ventilating the sealed area
- 28) Oxides of nitrogen can occur in a mine atmosphere:
- when certain explosives are used
 - when diesel-powered equipment is being used
 - when electric equipment produces arcs or sparks
 - all of the above
- 29) "Pogo sticks" are devices that are used:
- To test ground conditions.
 - To measure air velocity.
 - To determine direction of airflow.
 - As supports on which brattice cloth can be hung.

- 30) Mine rescue teams are required by Federal law to have available:
- a. one detecting device for each gas normally encountered in the mine(s) the team serves
 - b. one detecting device for each gas normally encountered in the mine(s) the team serves
 - c. four detecting devices for each gas normally encountered in the mine(s) the team serves
 - d. one detecting device for each team member