

# 2022 Southeast Regional Mine Rescue Contest

## Written Exam – Metal

Name: \_\_\_\_\_

Team: \_\_\_\_\_

Draw #: \_\_\_\_\_ Position #: \_\_\_\_\_

1. The purpose of mine ventilation is to provide a \_\_\_\_\_ of air sufficient to disperse and remove harmful gases, dust, smoke, and fumes, and to provide adequate oxygen.
  - a. Current
  - b. Mass
  - c. Volume
  - d. Flow
  
2. If the weight of a gas you're testing for is lighter than normal air, you'll know to test for it within \_\_\_\_\_ inches of the roof.
  - a. 24
  - b. 10
  - c. 14
  - d. 12
  
3. Sulfur dioxide has a specific gravity of \_\_\_\_\_ .
  - a. 2.2538
  - b. 2.2638
  - c. 2.2422

- d. BR549
4. It's much easier for concentrations of explosive gases to build up when the barometric pressure is \_\_\_\_\_.
- a. Low
  - b. Medium
  - c. High
  - d. Cold
5. Breathing air containing 5 percent carbon dioxide increases respiration \_\_\_\_\_ percent, causing difficult breathing.
- a. 300
  - b. 400
  - c. 500
  - d. 600
6. For example, the TLV for carbon monoxide (CO) is relatively low—50 PPM (or .005 percent). This means that the most CO you can be exposed to over an 8-hour daily period without harmful effects is \_\_\_\_\_ of one percent.
- a. 1/300
  - b. 1/100
  - c. 1/200
  - d. 2/4
7. If you wear your SCBA in petroleum-based fumes for prolonged or successive periods, the fumes can eventually \_\_\_\_\_ its rubber parts so that the apparatus no longer provides you with adequate protection
- a. Deteriorate
  - b. Permeate

- c. Ruin
  - d. Destroy
8. Propane has a specific gravity of \_\_\_\_\_ .
- a. 1.0493
  - b. 2.0100
  - c. 1.5486
  - d. 1.5625
9. A mixture of carbon dioxide, nitrogen, and air make up \_\_\_\_\_ .
- a. Afterdamp
  - b. Stinkdamp
  - c. Blackdamp
  - d. Firedamp
10. A mixture of carbon monoxide and air make up \_\_\_\_\_ .
- a. Blackdamp
  - b. Whitedamp
  - c. Afterdamp
  - d. Firedamp
11. The particles in \_\_\_\_\_ are usually soot or carbon, and tar-like substances such as hydrocarbons.
- a. Gases
  - b. Toxins
  - c. Smoke
  - d. Exhausts

12. Mines having little overburden may have surface cracks, a \_\_\_\_\_ fan is used so that any air that leaks through the cracks will leak away from the mine, not into the mine.
- a. Booster
  - b. Intake
  - c. Exhaust
  - d. Blower
13. In order to get the air to flow from the intake to the return, the return air must be at a \_\_\_\_\_ pressure than the intake.
- a. Lower
  - b. Higher
  - c. Equal
  - d. Different
14. The smoke tube is a device that emits a smoke cloud which floats along with the air current to show the direction of the airflow and the approximate \_\_\_\_\_ of the airflow.
- a. Current
  - b. Speed
  - c. Velocity
  - d. Reading
15. Sometimes, \_\_\_\_\_ are stationed at the fresh air base to carry messages from the fresh air base to the command center in the event of a communication breakdown.
- a. Helpers
  - b. Assistants
  - c. Runners
  - d. Members

16. To advance the fresh air base, the team will have to \_\_\_\_\_ a new air lock at the site of the new fresh air base and put up any additional temporary bulkheads in parallel entries that are needed to seal off the area at that point so that fresh air can be advanced.

- a. Build
- b. Erect
- c. Create
- d. Prepare

17. For rescue work, you will also wear a metal ring on your mine belt so you can hook onto a linkline, and it is common practice for everyone to wear a \_\_\_\_\_ .

- a. Rescuer
- b. Underwear
- c. Watch
- d. 5-11 Jacket

18. Just before the team begins to travel inby the Fresh Air Base, the \_\_\_\_\_ should be sure to write down the time of departure.

- a. Fresh air base attendant
- b. Team captain
- c. Fresh air base coordinator
- d. Map man

19. Wheeled extinguishers can weigh from \_\_\_\_\_ to 350 pounds.

- a. 50
- b. 75
- c. 80
- d. 100

20. Ventilation should always be continued through the mine during a fire in order to carry explosive gases and \_\_\_\_\_ away from the fire area and to direct the smoke, heat, and flames away from the team.

- a. Toxins
- b. Air
- c. Distillates
- d. Oxygen

21. If the fire begins to back up against the intake air in search of oxygen, you can put up a \_\_\_\_\_ brattice (or hurdle brattice) from side to side leaving an open space at the top.

- a. Partial
- b. Temporary
- c. Curtain
- d. Transverse

22. Working in a hot and/or steamy atmosphere will tend to make you more exhausted than normal and cause additional \_\_\_\_\_ on your system, especially if you're working hard.

- a. Strain
- b. Heat
- c. Stress
- d. Drainage

23. Miners who barricade themselves into an area will usually try to leave \_\_\_\_\_ of where they are barricaded to aid rescuers in finding them.

- a. Clues
- b. Indications
- c. Examples

d. Signs

24. The safest \_\_\_\_\_ for getting survivors out is usually to advance fresh air to the barricade by the quickest means possible.

- a. Way
- b. Process
- c. Technique
- d. Procedure

25. The advantage of \_\_\_\_\_ ventilation is that gas conditions can be carefully controlled, and the operation can be halted at any point in which conditions become hazardous.

- a. Direct
- b. Progressive
- c. Staged
- d. Controlled

26. Power is usually restored \_\_\_\_\_ by an electrician as the ventilation is advanced.

- a. Directly
- b. Automatically
- c. Progressively
- d. Passively

27. What are some preconditions for opening a sealed fire area?

- a. The oxygen content of the atmosphere in the sealed area should be low enough so that an explosion is impossible.
- b. There should be no carbon monoxide, indicating that the fire is out.

- c. The sealed area should have cooled enough so that the fire is not rekindled when the area is re-ventilated.
- d. All the above.

28. If they are available, \_\_\_\_\_, which are spring-loaded expandable metal rods, can be used instead of posts to erect temporary bulkheads.

- a. Paint poles
- b. Extendorods
- c. Pogo sticks
- d. Loading poles

29. When survivors are located, the \_\_\_\_\_, time, and date should be marked on the team's map and marked on the side in the passageway where they were found.

- a. Condition
- b. Blood type
- c. Location
- d. Name

30. It is often recommended that all possible electrical conductors (track, pipe, wires, etc.) be \_\_\_\_\_ so that the affected area beyond the fresh air base is isolated from any possible stray or direct current.

- a. Cut
- b. Disconnected
- c. Severed
- d. Isolated