

2022 Southeast Regional Mine Rescue Contest

Written Exam – Trainer MNM

Name: _____

Team: _____

1. It is _____ that information related to the emergency be controlled, communicated, and disseminated appropriately.
 - a. Critical
 - b. Crucial (1-5)**
 - c. Important
 - d. Imperative

2. Set up an area where food and drinks are available for the rescue teams and other personnel may be a duty of the _____ .
 - a. Safety director
 - b. Mine clerk
 - c. Outside supervisor (1-8)**
 - d. Supply clerk

3. Each mine rescue station shall have one portable mine rescue communication system (approved under part _____ of this title) or a sound-powered communication system.
 - a. 20
 - b. 42
 - c. 23 (4-13)**

- d. 18
4. When the oxygen content of air drops to about ____ percent, you'll begin to breathe faster and deeper because your body is trying to compensate for the lack of oxygen.
- a. 18
 - b. 17 (2-14)
 - c. 16
 - d. 15
5. There are _____ main causes of oxygen deficiency in the mine.
- a. Six
 - b. Three
 - c. Four (2-14)
 - d. Five
6. The explosive range for Ethane is _____ .
- a. 2.5 to 80%
 - b. 2.12 to 9.35%
 - c. 1.86 to 8.41%
 - d. 3.0 to 12.5% (2-28)
7. The detection method for Radon (Rn) is _____ .
- a. Survey meter (2-49)
 - b. Multi-gas meter
 - c. Chemical analysis
 - d. Air gas bottle

8. For radios, all Frequencies will have a PL code set for transmit and receive of _____ Hz.
- a. 88.2
 - b. 92.6
 - c. 94.8 (rules 15)
 - d. 96.2
9. A minimum of _____ radios shall remain operational during the working of the problem.
- a. Two
 - b. Three (rules 16)
 - c. Four
 - d. Six
10. Terms used in the problem will be terms which appear in the Glossary of this Rule Book, the MSHA Mine Rescue Training Modules, or 30 CFR Part 49 and Part _____.
- a. 56
 - b. 57 (rules 22)
 - c. 58
 - d. 62
11. _____ Bells: Emergency - then ring mine level signal where emergency exists.
- a. 7
 - b. 8
 - c. 9 (rules 25)
 - d. 10

12. For the purposes of contest work, no barricade will be breached without ventilating in front of the barricade if an Immediately Dangerous to Life or Health (IDLH) atmosphere is present, including: Oxygen (O₂) is below 17.0%; or Carbon Monoxide (CO) exceeds 1200 ppm (0.12%); or Hydrogen Sulfide (H₂S) exceeds 100 ppm (0.01%); or Nitrogen Dioxide (NO₂) exceeds 20 ppm (0.002%); or Sulfur Dioxide (SO₂) exceeds 100 ppm (0.01%); or Carbon Dioxide (CO₂) exceeds _____ %.

a. 2.0

b. 4.0 (rules 29)

c. 6.0

d. 8.0

13. Failure of team captain to mark date and team position number on the check board at mine portal or fresh air base, or start timing device, each omission _____.

a. 1

b. 2

c. 4 (rules 42)

d. 6

14. For the Draeger BG-4 with Sentinel, open the oxygen cylinder valve. The icon "Close cylinder valve" appears on the display, the backlight is on, and a double alarm beep sounds when the pressure is greater than 2600 psi/_____ bar.

a. 155

b. 165 (rules 80)

c. 175

d. 180

15. After _____ seconds when the BG-4 is O.K.: The icon "Open cylinder valve" appears on the display, the backlight is on, and the countdown process of the bar graph continues. The high pressure leak test has been passed successfully.

a. 10

b. 15 (rules 80)

c. 25

d. 30

16. For Contest purposes, multi-gas instruments used by the teams during the field and technician team competitions must include at least one instrument that meets the requirements of 30 CFR 49.16(____)(6).

a. D

b. C

c. B

d. A (rules 69)

17. Each member of a mine rescue team shall be examined annually by a physician who shall certify that each person is physically fit to perform mine rescue and recovery work for prolonged periods under strenuous conditions. The first such physical examination shall be completed within _____ days prior to scheduled initial training.

a. 30

b. 60 (30cfr 49.7)

c. 90

d. 120

18. Mine rescue teams erecting temporary bulkheads in atmosphere with elevated hydrogen or methane readings should:

a. Use only inflatable seals.

b. Leave a corner of the bulkhead open for the hydrogen or methane to exit.

c. Use non-sparking tools and nails. (3-49)

d. Never enter such atmosphere.

19. In advancing a fresh air base, after you put up the new air lock, the team should:

a. Come out of the mine.

b. Perform gas tests in all dead ends and high places between the old and new fresh air base to ensure that all gases have been flushed from the area. (4-49)

c. Proceed beyond the new fresh air base to explore and let other workers check for any gases in the area between the old and new fresh air bases.

d. Shut off and remove your apparatus since you are in fresh air and will no longer need it.

20. A monoammonium phosphate extinguisher is effective in fighting:

a. Class A fires

b. Class B fires

c. Class C fires

d. All of the above (5-47)

21. Copper tubes or pipes are inserted in temporary and permanent bulkheads for the purpose of:

a. Checking for smoke

b. Bleeding off excess pressure from the sealed area

c. Collecting air samples from the sealed area (5-48)

d. Ventilating the sealed area

22. A methane explosion occurred in a working area. What gas conditions might you expect to encounter in an exhaust airway, and what hazards would these gases present?

a. O₂ deficiency

b. Elevated CO, CH₄, CO₂, NO₂, H₂, and heavy hydrocarbons (ethane, butane, propane)

- c. Irrespirable atmosphere
- d. Possible further explosions
- e. All the above (8-11)
- f. None of the above

23. Because efforts to fight the fire directly have failed, an area of a mine has been sealed. The plan is now to reopen the sealed area by means of progressive ventilation. Recent air samples indicated no traces of CO in the sealed area and a low oxygen level. Look now at the map. Another rescue team has already put up an air lock in No. 4 entry. Your team's assignment is to go in, explore, and assess conditions. Be sure to check all entries and crosscuts and tie-in as you go. Do not advance any farther than two breakthroughs. What hazards might you encounter as you explore the area?

- a. Toxic or explosive gases
- b. Weakened ground conditions (because of heat from the fire)
- c. Hot spots or smoldering material (These could flare up into fires or cause a gas ignition.)
- d. All the above (8-46)

24. A mock disaster training session requires setting up a command center, establishing a fresh air base, and _____ on a rotation schedule. This idea is not new. A number of companies already use a mock disaster training session as part of their total emergency preparedness training.

- a. Deploying teams (8-51)
- b. Establishing teams
- c. Calling out teams
- d. Issuing teams

25. These are small air sacs at the end of the bronchioles where blood cells replenish their oxygen supply and release their accumulated carbon dioxide.

- a. Bronchiole
- b. Pleura

c. Alveoli (brady 10th p. 145)

d. Bronchi

26. When functioning properly, the heart is an amazingly efficient pump that beats an average of _____ times per day.

a. 50,000

b. 100,000 (brady 10th p. 276)

c. 250,000

d. 500,000

27. Using the AVPU scale, if a patient can also tell you exactly or approximately what time it is, he or she is considered to be A & O x _____ .

a. 1

b. 2

c. 3 (brady 10th p. 309 table 16.1)

d. 4

28. For cuts to the internal cheek, position a dressing between the patient's cheek and gum. (Do not pack the mouth with dressings.) Hold the dressing in place with a gloved hand. Always leave _____ inches of dressing material outside the patient's mouth to allow for quick removal.

a. One to two

b. Three to four (brady 10th p. 378)

c. Five to six

d. Never leave anything outside the mouth.

29. If the leg from hip to foot is rotated outward (laterally) farther than the uninjured side, the patient is suspected to have a _____ hip dislocation.

- a. Posterior
- b. Anterior (brady 10th p. 425)
- c. Total
- d. Partial

30. In mechanisms of spinal injuries, a hanging is considered a _____ injury.

- a. Distraction (brady 10th p. 436)
- b. Compression
- c. Hyperextension
- d. Flexion