

2022 Southeast Regional Mine Rescue Contest

Written Exam – Trainer Coal

Name: _____

Team: _____

1. Section 7(3) of the MINER Act of _____ requires that in such accidents, that the Mine Safety and Health Administration will serve as the primary communicator with the operator, miners' families, the press and the public.
 - a. 2004
 - b. 2006 (1-5)
 - c. 2008
 - d. 2009

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 (2-13)
 - c. 16
 - d. 15
5. There are _____ main causes of oxygen deficiency in the mine.
- a. Six
 - b. Three
 - c. Four
 - d. Five (2-13)
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, 4 Channels are available: With frequencies of _____ MHZ (Channels 1 thru 4 with the use of a Portable Mesh Node).
- a. 901 to 932
 - b. 903 to 927 (rules 6)**
 - c. 905 to 935
 - d. 906 to 986
9. A minimum of _____ radios shall remain operational during the working of the problem.
- a. Two
 - b. Three (rules 5)**
 - c. Four
 - d. Six
10. Each team must have its own breathing apparatus approved under Part _____, Title 42, Code of Federal Regulations.
- a. 64
 - b. 34
 - c. 84 (rules 4)**
 - d. 57
11. Any team or member receiving unauthorized information concerning a Contest problem after arriving at the fresh-air base may be disqualified by the Chief Judge and Director or discounted under Rule _____ .
- a. 27
 - b. 37 (rules 7)**
 - c. 47
 - d. 57

12. Proper protection must be used on persons exposed to or found in irrespirable atmospheres. Atmospheres containing less than 19.5 percent oxygen, concentrations of carbon monoxide in excess of _____ PPM or smoke are irrespirable atmospheres. In an irrespirable atmosphere, patient must be protected by an approved breathing apparatus prior to being moved from that location.
- a. 30
 - b. 40
 - c. 50 (rules 31)
 - d. 60
13. Failure of captain to examine gauges, apparatus, and to have his/her gauges, apparatus examined before entering the mine, or going in by the fresh air base each apparatus ____ .
- a. 1
 - b. 2 (rules 15)
 - c. 3
 - d. 5
14. Set RZ-7000 tester on leak test. Open cylinder valve. Watch the Sentinel unit, the cylinder pressure is indicated here. If it is lower than _____ psi, change the oxygen cylinder. If it is greater than _____ psi, alarm beeps two times. Sentinel indicates “close cylinder” icon, as soon as the icon appears, close cylinder valve.
- a. 2600 (bg rules 11)
 - b. 2650
 - c. 2750
 - d. 2800
15. Result of the tests is output after approximately _____ seconds. If the PSS BG-4 is okay, “open cylinder valve” icon, as soon as the icon appears open cylinder valve.
- a. 10
 - b. 15 (bg rules 11)

- c. 25
- d. 30

16. 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 (2-70)
- d. all of the above

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, nails, and spads. (3-57)
- 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. (4-47)

- 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 (8-53)
- b. Establishing teams
- c. Calling out teams
- d. Issuing teams

25. 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

26. 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

27. 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.

28. 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

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

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

30. 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