2016 Northern Mine Rescue Contest

Written Exam

Field Competition

June 14, 2016

Clymer, New York

Please do not write on this test. Use the answer sheet provided.

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Directions: Fill in the corresponding bubble on your Scantron sheet to indicate the letter preceding the correct answer to each of the following questions. Select only one answer per question.

1. As part of the "triage" system, survivors can be categorized into three priority groups according to their condition or injury. A survivor with multiple fractures would be a _____ condition.

    A. Low, or third priority
    B. Second priority
    C. First priority
    D. Described condition not included in any of the above priority categories.

2. Before entering a mine to search for missing miners, there are several questions to which you should have answers. These include:

    A. How many miners are missing?
    B. What areas were they supposed to be working in?
    C. Are the miners trained to shelter in place?
    D. Both A and B

3. If bodies are not recovered soon after death, they will begin to decompose. Some of the factors that influence body deterioration are:

    A. Air temperature in the area
    B. Body size of the victim
    C. Amount of physical trauma incurred by the victim
    D. All of the above

4. One thing to remember when dealing with any injury is to stay as calm as possible. Sometimes when faced with a gruesome or unnerving sight, the best thing to do is take a deep breath and continue to breathe fully and deeply until the job is finished.

    A. True
    B. False

5. All decisions concerning the mine rescue teams (scheduling, assignments, tracking, rotations, and methods of exploration or firefighting) are made by the _____.

    A. Mine superintendent
    B. MSHA district manager
    C. Command center
    D. Fresh air base coordinator

6. It is important to establish a clear chain-of-command so that rescue and recovery work can be well coordinated. Thus, the team is under the direct supervision of the team captain.

    A. True
    B. False

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7. A standby team is scheduled to be on the surface in ready reserve when rescue teams are working underground.

    A. True
    B. False

8. In the fire triangle, each leg of the triangle is labeled with one of the elements necessary for a fire: fuel, oxygen or heat. Smothering a fire with noncombustible materials removes the _____.

    A. Fuel
    B. Oxygen
    C. Heat
    D. All of the above

9. A dry chemical extinguisher containing monoammonium phosphate is effective _____ fires.

    A. Only on Class A
    B. Only on Class A and Class B
    C. On Class A, Class B, and Class C
    D. On Class A, Class B, Class C and Class D

10. Water can also be used to put out fires. Water acts to cool the fire, removing heat from the fire triangle. Water is an effective extinguishing agent _____ fires.

    A. Only on Class A
    B. Only on Class A and Class B
    C. On Class A, Class B, and Class C
    D. On Class A, Class B, Class C and Class D

11. High expansion foam is used mainly to contain and control fire by removing ____ and ____.

    A. Oxygen and fuel
    B. Heat and oxygen
    C. Fuel and heat
    D. None of the above

12. Determining the exact time to unseal a fire area is based on the laws of physics and chemistry, as well as on experience and sound judgement. The main factors governing the time for unsealing a fire area include:

    A. Extent and intensity of fire at the time of sealing
    B. Gas conditions as indicated by analysis of air samples taken in front of the seals
    C. Location of the fire area with respect to ventilation
    D. Both A and C

13. The two basic methods for unsealing a fire area are progressive and indirect ventilation.

    A. True
    B. False

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14. During a recovery using progressive ventilation, the sealed area is explored and re-ventilated in successive blocks by the use of airlocks. The main disadvantage of progressive ventilation is that it is a slow process.

    A. True
    B. False

15. Barefaced exploration should stop _____.

    A. When the crew encounters smoke or damage
    B. When gas tests indicate the presence of carbon monoxide or other noxious gases
    C. When disruption in ventilation are found
    D. All of the above

16. In single-level, room-and-pillar mines, a fresh air base can be established in a drift, entry or crosscut close to the affected area. In these cases, _____ must be constructed to isolate the fresh air base from the unexplored area beyond it.

    A. A temporary stopping
    B. An air lock
    C. A permanent bulkhead
    D. None of the above

17. The ____ is responsible for just about everything that goes on at the fresh air base.

    A. Command center
    B. Fresh air base coordinator
    C. Backup team captain
    D. Both B and C

18. Once a fresh air base is established, apparatus teams will begin to explore the affected area. The number of trips needed to complete exploration and the time it will take depends on:

    A. The extent of the area involved
    B. The conditions within the affected area
    C. The number of teams underground
    D. Both A and B

19. As you explore, your first priority is team safety. Your second priority is _____.

    A. Rescue of survivors
    B. Extinguish or seal any fires
    C. Re-establish ventilation
    D. Map all conditions found in the affected area

20. When establishing an area for a fresh air base, the area should be free of oil and grease, large enough to accommodate all of the people using it, and isolated from any stray or direct current.

    A. True
    B. False

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21. The purpose of mine ventilation is to provide a volume of air sufficient to disperse and remove harmful gases, dust, smoke, and fumes and to provide adequate oxygen.

    A. True
    B. False

22. In order to get the air to flow from the intake to the exhaust entries, the intake air must be at a higher pressure than the exhaust.

    A. True
    B. False

23. Regulators are used to control and adjust the quantity of airflow in the mine in order to ensure proper distribution. A partially opened _____ can be used as a regulator.

    A. Man door
    B. Temporary stopping
    C. Sliding door in a permanent bulkhead
    D. All of the above

24. The "rule of thumb" when altering ventilation is not to change the ventilation _____.

    A. Without direct orders from the command center
    B. Into an unexplored area
    C. By simply reversing the main fan
    D. All of the Above.

25. Another way to test for gases is to collect air samples in special syringes or evacuated bottles. Although it is a more time-consuming process, complete chemical analysis of the samples can reveal the presence of gases that portable detectors are not designed to detect.

    A. True
    B. False

26. When a mine is sealed off for any length of time, water can collect in it. Pools of water can release ____ gases into the air when they are stirred up.

    A. Water-soluble
    B. Explosive and non-explosive
    C. Poisonous and toxic
    D. All of the above

27. The volume of a gas changes in response to any change in _____.

    A. The ventilating air currents in the mine
    B. Its specific gravity
    C. Atmospheric pressure or temperature
    D. All of the Above

28. Any flammable gas can explode if _____.

    A. There is enough of the gas present in the air
    B. There is enough oxygen present in the air / gas mixture
    C. There is an ignition source in the area
    D. A, B and C must be present at the same time

29. Although color, odor, and taste are physical properties which can help you to identify a gas during barefaced exploration, you cannot rely solely on your senses to positively identify a gas.

    A. True
    B. False

30. Which of the following is not true for carbon monoxide (CO)?

    A. It is an explosive and flammable gas
    B. It is highly toxic and its poisoning effects are cumulative over time
    C. It is lighter than air and can be measured using a portable detector at chest level
    D. It is a product of the complete combustion of any carbon material

ANSWER KEY

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All questions taken from MSHA Publication 3027

Question	Answer	Source
1	**B.**	Module 6, pg. 6-6
2.	**D.**	Module 6, pg. 6-3
3.	**D.**	Module 6, pages 6-9 and 6-10
4.	**A.**	Module 6, pg. 6-6
5.	**C.**	Module 1, pg. 1-3
6.	**A.**	Module 1, pg. 1-6
7.	**A.**	Module 1, pg. 1-14
8.	**B.**	Module 5, pg. 5-4
9.	**C.**	Module 5, pg. 5-6
10.	**A.**	Module 5, pg. 5-8
11.	**B.**	Module 5, pg. 5-10
12.	**D.**	Module 7, pg. 7-5
13.	**B.**	Module 7, pg. 7-5
14.	**A.**	Module 7, pg. 7-7
15.	**D.**	Module 4, pg. 4-6
16.	**B.**	Module 4, pg. 4-7
17.	**B.**	Module 4, pg. 4-9
18.	**D.**	Module 4, pg. 4-11
19.	**A.**	Module 4, pg. 4-12
20.	**A.**	Module 4, pg. 4-7
21.	**A.**	Module 3, pg. 3-4
22.	**A.**	Module 3, pg. 3-5
23.	**D.**	Module 3, pg. 3-12
24.	**B.**	Module 3, pg. 3-15
25.	**A.**	Module 2, pg. 2-4
26.	**D.**	Module 2, pages 2-10, (2-19 - 2-20 for H_2S), (2-21 for SO_2)
27.	**C.**	Module 2, pg. 2-5
28.	**D.**	Module 2, pg. 2-7
29.	**A.**	Module 2, pg. 2-8
30.	**D.**	Module 2, pages 2-16 - 2-17