MSHA Publication 3027 (formerly IG 6-Instructor’s Manual for Mine Rescue training) Module 2-Mine Gases and Module 3-Ventilation, Mine Rescue Contest Rules/BG4

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Company\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Team Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Contest Position Number\_\_\_\_\_\_\_\_\_

Team Member Number\_\_\_\_\_\_\_\_\_

Directions: circle the letter preceding the correct answer to each of the following questions: Circle only one answer per question

1. When the barometer falls, this means:
2. **Gases will diffuse more quickly--- Module 2-page12**
3. The atmospheric pressure is rising
4. It is much easier for explosive gases to build up
5. Gases are squeezed into a smaller area
6. Methane is most explosive at what range
7. 5% to 15% with at least 12.1% oxygen
8. 9.5% to 12.5% with at least 12.1% oxygen
9. 5% to 10%
10. **9.5% to 10%--Module 2—page 43**
11. Electrical malfunctions can produce oxides of nitrogen
12. **True - Module 2—page 35**
13. False
14. Usually, the measured distance using a smoke tube is \_\_\_\_\_\_\_\_\_feet
15. 100
16. 50
17. 75
18. **25—Module 3—page 31**
19. Asphyxiating gases
20. Can, in all cases, be tasted, smelled, or seen
21. **Cause suffocation—Module 2—page 19**
22. Cause the metal parts of an apparatus to corrode
23. Do not produce an oxygen deficient atmosphere
24. The explosive range of hydrogen is \_\_\_\_\_\_\_\_\_\_\_to 74.2%
25. 7%
26. 5%
27. **4%--Module 2—page 71**
28. 3%
29. An anemometer is a small windmill device with a mechanical counter that measures air velocities of over \_\_\_\_\_\_\_\_\_\_\_\_feet per minute
30. 100
31. 110
32. **120—Module 3—page 27**
33. None of the above
34. Mine ventilation air always moves from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
35. Neutral pressure regions to atmospheric pressure regions
36. Low pressure regions to high pressure regions
37. **High pressure regions to low pressure regions—Module 3—page 8**
38. Balanced pressure regions to unbalanced pressure regions
39. A partially opened mine door can be used as a regulator
40. **True - Module 3—page 21**
41. False
42. The most accurate measurement of air velocity using a smoke tube is obtained by releasing smoke in the center of the airway
43. True
44. **False—Module 3—page 30**

11. The mission must always be ended when the low-pressure warning output is at approximately 135 psi

* 1. True

1. **False - BG4 service manual—page 12**

12. The carbon cylinder has a life span of \_\_\_\_\_years

* 1. 5

1. 10
2. **15 - BG4 service manual—page 52**
3. 20

13. On the relief valve, the over pressure valve opens between

2-5 mbar

1. **True - BG4 service manual—page 57**
2. False

14. A leak in the dosage line can cause low dosage

1. **True BG4 service manual—page 23**
2. False

15. Carbon monoxide contained in the exhaled air is absorbed in the regeneration cartridge

* 1. True
  2. **False - BG4 service manual—page 3**

16. When installing a relief valve, turn relief valve 45 degrees to the left

* 1. **True BG4 service manual—page 31**
  2. False

17. High pressure O2 cylinders contain \_\_\_\_\_% O2

* 1. 96.5

1. 97.5
2. 98.5
3. **99.5 BG4 service manual—page 52**

18. When checking the inhalation valve for control function; the pressure gauge must indicate +10 psi

* 1. True
  2. **False - BG4 service manual—page 35**

19. When testing the CO2 absorber the test pressure should be between +7 mbar and + 10 mbar

* 1. **True BG4 service manual—page 42**

1. False

20. When checking components (equipment connector and breathing hoses, CO2 Absorber and Breathing air cooler) with the RZ tester, the pressure loss should not exceed 1.5 mbr/min

* 1. True

1. **False BG4 service manual—page 42**

21. The maximum drying temperatures for BG4 parts is \_\_\_\_\_˚C

* 1. 50˚C

1. 55˚C
2. **60˚C BG4 service manual—page 45**
3. 65˚C

22. The relief valve activation occurs at \_\_\_\_\_PSI

* 1. 85
  2. 86
  3. **87 BG4 service manual—page 51**
  4. 88

23. Dosage output is 1.5 to 1.9 PSI

* 1. True
  2. **False BG4 service manual—page 51**

24. For units that are in constant use the valve disc on the exhalation and inhalation valves need to be replaced every \_\_\_\_\_

* 1. yearly
  2. 2 years
  3. **3 years BG4 service manual—page 44**
  4. 4 years

25. Drager Safety needs to perform a major overhaul of the pressure reducer every 5 years

a. True

**b. False BG4 service manual—page 44**

26. Constant dosage for the BG4 apparatus must be 1.5 to 1.8 L/min

a. True

**b. False BG4 service manual—page 38**

27. When checking the minimum valve the admission pressure of the minimum valve must be between \_\_\_\_\_ and \_\_\_\_\_mbar

* 1. 0.5 and 2.0

1. 0.1 and 1.5
2. 1.0 and 2.5
3. **0.1 and 2.5 BG4 service manual—page 38**

28. To check the relief valve on the BG4; set the pump on positive pressure, pump until relief valve opens, read admission pressure from the pressure gauge and it must be 2 to 7 mbar

a. True

**b. False BG4 service manual—page 37**

29. To check the residual warning the cylinder must be closed, observe display unit; the warning must react at approximately 700 psi

**a. True BG4 service manual—page 40**

b. False

30. The Panorama Nova mask has a peripheral vision of 95%

a. True

**b. False BG4 service manual-page 60**