Test Bio Pak
2014 Dalton GA

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:
   a. Gases will diffuse more quickly
   b. The atmospheric pressure is rising
   c. It is much easier for explosive gases to build up
   d. Gases are squeezed into a smaller area

2. Methane is most explosive at what range
   a. 5% to 15% with at least 12.1% oxygen
   b. 9.5% to 12.5% with at least 12.1% oxygen
   c. 5% to 10%
   d. 9.5% to 10%

3. Electrical malfunctions can produce oxides of nitrogen
   a. True
   b. False

4. Usually, the measured distance using a smoke tube is _____feet
   a. 100
   b. 50
   c. 75
   d. 25

5. Asphyxiating gases
   a. Can, in all cases, be tasted, smelled, or seen
   b. Cause suffocation
   c. Cause the metal parts of an apparatus to corrode
   d. Do not produce an oxygen deficient atmosphere

6. The explosive range of hydrogen is _____to 74.2%
   a. 7%
   b. 5%
   c. 4%
   d. 3%

7. An anemometer is a small windmill device with a mechanical counter that measures air velocities of over _____feet per minute
   a. 100
   b. 110
   c. 120
   d. None of the above

8. Mine ventilation air always moves from _____
   a. Neutral pressure regions to atmospheric pressure regions
   b. Low pressure regions to high pressure regions
   c. High pressure regions to low pressure regions
   d. Balanced pressure regions to unbalanced pressure regions

9. A partially opened mine door can be used as a regulator
   a. True
   b. False

10. The most accurate measurement of air velocity using a smoke tube is obtained by releasing smoke in the center of the airway
    a. True
    b. False

1. Under extremely heavy work conditions, if the user inhales and collapses the diaphragm as far as it can travel, it activates the
   a. By-Pass Valve
   b. Demand Valve
   c. Relief Valve
   d. Check Valve

2. If the constant add or the demand valve fails in your apparatus, the user can still manually fill the breathing chamber by activating the
   a. Emergency By-Pass Valve
   b. Demand Valve
   c. Relief Valve
   d. Check Valve

3. If the user exhales and the breathing diaphragm/breathing chamber fills to a specified capacity, the breathing chamber will cause the activation of the
   a. By-Pass Valve
   b. Demand Valve
   c. Relief/vent Valve
   d. Check Valve

4. What specifically controls the directional flow of the breathing gasses
   a. The hoses
   b. The mask
   c. The breathing bag or chamber
   d. The CO2 scrubber/absorber
   e. The check valves

5. Typically a Closed Circuit Breathing Apparatus has
   a. Cylinder or High pressure, regulated or reduced pressure, and breathing circuit or breathing loop pressure
   b. Only oxygen pressure
   c. Only oxygen and CO2 pressure
   d. Only mask pressure

6. The function of the regulator is to
   a. Increase cylinder pressure in the apparatus
   b. Moisture control
   c. Decrease cylinder pressure in the apparatus plumbing and pneumatics
   d. A & C

7. When my CO2 absorbent is used up, the material now becomes
   a. Lithium Hydroxide
   b. Limestone (Calcium Carbonate)
   c. Lithium Carbonate
   d. Magnesium Hydroxide
   e. Calcium Hydroxide
   f. None of the above

8. If you hear the Demand every time you inhale, and you are not working hard, you should
   a. Use the Emergency By-Pass Valve
   b. Breathe slower
   c. Turn off the oxygen cylinder
   d. Check your facemask fit and adjust if for a better seal

9. The purpose of the CO2 absorbent is to ensure
   a. Carbon Monoxide is removed from the breathing gasses
   b. Carbon Dioxide is removed from the breathing gasses
   c. The correct amount of Oxygen is metered out
   d. The oxygen tastes good

10. Which of the following is a correct statement
    a. It is acceptable to reuse CO2 absorbent
    b. It is acceptable to use unapproved CO2 absorbent material in my apparatus
    c. CO2 absorbent material left exposed to ambient air for 48 hours is approved for use
    d. It is acceptable to store CO2 absorbent is temperatures below freezing
    e. None of the above

11. Higher than normal breathing temperatures may be causes by
    a. Higher than normal ambient temperatures
    b. Failure to install ice canister/gel tube
    c. Low working rates
    d. A & B

12. During turn-around maintenance one of the NIOSH/MSHA or manufactured required tests fails. What is the best action to take
    a. Ignore the failure and place the apparatus in to service, they won't notice it
    b. Troubleshoot per the manufactures requirements, document the issue and isolate the part, repair or replace or tag out the apparatus
    c. Just start replacing components until the problem goes away
    d. None of the above

13. Prior to donning the apparatus you notice that the harness has been modified by a previous user. The user punched extra holes in the straps to hold some of his gear and now the harness appears compromised. What best describes your actions
    a. Do nothing, everyone does it and it's not going to hurt anything, it's just the harness
    b. Scream obscenities at the guy who last used it telling him he just ruined a perfectly good harness
    c. Replace or repair the harness per the manufacturer's recommendations
    d. None of the above

14. During a successful underground mission one of your team members complained of higher than normal breathing resistance. What is NOT the cause
    a. Forgot to anti-fog the mask
    b. Check valves are stuck
    c. Hoses were crimped or crushed
    d. Springs were installed incorrectly
    e. All of the above

15. What BEST describes when the NIOSH/MSHA low oxygen indicator alarm activates
    a. High CO2 levels
    b. There is a leak
    c. At 20-25% end of service life, or about 750 psi remaining pressure
    d. At start up

16. The oxygen booster pump should be stored in an area free of
    a. Air
    b. Dirt, oils, and grease
    c. Numerous ignition sources
    d. Gasoline
    e. All the above
    f. B, C & D

17. It is an acceptable practice to store your apparatus for long term in the manufacturers hard storage case when it is
    a. Clean but wet
    b. Right after it has been used and wet
    c. Washed/disinfected, dried and properly assembled for storage and properly benched
    d. Just throw it in the case and let someone else worry about it later

18. You notice a high pressure leak on one of your oxygen fittings. Which is most correct
    a. Use an oily and dirty tool
    b. Work on it after it has been depressurized
    c. Use the correct tool, cleaned for use around oxygen
    d. Tightened beyond the manufacturers specifications to ensure it does not leak again
    e. B & C
    f. None of the above

19. What BEST describes Long-Term Maintenance testing
    a. Delaying Turn-Around Maintenance for 30 days
    b. Open the case and look it over
    c. Wear it for 10 minutes and then put it away
    d. Follow the manufacturer's recommendation in the User or Benchman Manual

20. The approved NIOSH/MSHA and manufacturer rated duration of my Closed Circuit Breathing Apparatus is
    a. 1-Hour
    b. 2-Hour
    c. Variable
    d. 3-Hours
    e. 4-Hours