



BioPak 240 Revolution

BioPak 240 R Benchman's Quiz

Instructions

Circle the correct letter or answer that represents the **BEST** answer. If you make a correction make sure all erasures are complete. You have 45 minutes to complete this quiz. Please print your name, company name and date clearly in the spaces below **exactly as you would like it to appear on your certificate.**

Name:

Date:

Company:

Part 1, True or False

Circle "True" or "False"

1. The o-ring used to seal the CO₂ absorbent cartridges to the center section are reusable and must be washed and disinfected after each use.

TRUE
FALSE

2. Any type of leak detection liquid such as "LeakTec," "Snoop" or soapy water solution may be used for the high pressure leak test.

TRUE
FALSE

3. The BioPak 240 R Oxygen Cylinder is filled with 440 liters (15.7 cubic feet) of medical or aviation grade oxygen.

TRUE
FALSE

4. The BioPak 240 R Diaphragm has the following three major functions:

It provides a counter-action to the user's lungs

It activates a demand valve during periods of heavy work

It activates a pressure relief valve during periods of inactivity

TRUE
FALSE

5. When the Diaphragm subassembly is removed for maintenance, alignment of the diaphragm is NOT important during re-installation.

TRUE
FALSE

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6. For safe operation and to maintain the certification approvals, only Biomarine spare parts should be used on the BioPak 240 R.
TRUE
FALSE
7. The BioPak 240 R alarm activates at approximately 25% end of service life or 750 psig (50 bar).
TRUE
FALSE
8. Alcohol is an acceptable substitute for Portion-Pak anti-bacterial/germicide.
TRUE
FALSE
9. The large center section lid O-Ring should be kept lubricated with a lubricant such as Vaseline.
TRUE
FALSE
10. The oxygen "BODOK" seal is subject to high pressure and therefore must be lubricated with Cristo-Lube.
TRUE
FALSE
11. The CO₂ absorbent cartridges are a very effective absorbent of Carbon Dioxide, and you have the option to use only one cartridge when training or using the BioPak 240 R for 2 hours or less.
TRUE
FALSE

Part 2, Multiple Choice

Circle the correct letter. Circle only one letter for each question.

12. Periodic Maintenance should be performed at least ____ on BioPak 240 R units in a constant use.
A. Daily
B. Weekly
C. Monthly
D. Quarterly
13. If the BioPak 240 R cylinder is accidentally filled with a foreign or unapproved gas the cylinder must be:
A. Thoroughly cleaned and inspected
B. Sent out for hydrostatic testing
C. Pull a vacuum and refill with an approved gas
D. Condemned and taken out of service
14. The following critical components must be replaced every 5 years
A. Diaphragm Assembly
B. Pressure reducer/regulator
C. Breathing Chamber Lid O-Ring
D. None of the Above

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15. The Revolution Monitoring System battery must be replaced
 - A. When a low battery alarm occurs
 - B. After 200 hours of use
 - C. Every 6 months
 - D. In a safe area known to be free of explosive gasses
 - E. With the cylinder valve closed/off
 - F. All of the above
16. The shelf-life of an unopened and bagged CO₂ absorbent cartridge is
 - A. Up to 1 hour
 - B. 5 years
 - C. 1 year
 - D. 3 years
17. It is normal for the BioPak 240 R remote (chest) pressure gauge to display full bottle pressure:
 - A. Before the BioPak 240 R has been turned on.
 - B. Approximately 1 minute after the BioPak 240 R has been turned on
 - C. Immediately after turning on the BioPak 240 R
 - D. All of the Above
 - E. None of the Above
18. Turn-Around Maintenance should be performed
 - A. As soon as possible after each use
 - B. On a monthly basis
 - C. During periodic maintenance
 - D. During long-term maintenance
 - E. None of the Above
19. If the pressure gauge line were to be severed the _____ will conserve oxygen usage to allow adequate breathing gas for a safe exit from the hazardous area
 - A. Emergency By-Pass Valve
 - B. Gauge Line Flow Restrictor
 - C. Gauge Line Manual Quick Disconnect
 - D. B & C
20. The following steps are part of the Turn-Around Maintenance Tag except for
 - A. Washing/disinfecting
 - B. Carbon dioxide cartridges replaced
 - C. Oxygen cylinder replacement/filled
 - D. Flow check
 - E. Low-pressure leak test
 - F. High-pressure leak test
 - G. Ice canister placed in freezer
21. When submerging the center-section during turn-around maintenance, caution should be exercised so that
 - A. The flow restrictor is kept dry
 - B. The bottom edge of the diaphragm does not become abraded, perforated or torn
 - C. The volume of water does not over extend the diaphragm
 - D. B & C

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22. The BioPak 240 R Oxygen Cylinder must be hydrostatically tested every _____ years
- A. Two
 - B. Three
 - C. Five
 - D. Ten
23. The BioPak 240 R Oxygen Cylinder is made out of
- A. Steel
 - B. Fiberglass Wrapped Steel
 - C. Aluminum
 - D. Carbon Fiber Wrapped Aluminum
24. Freezing of the ice canister in the freeze form prevents
- A. Easy removal
 - B. Improper expansion
 - C. Heat stress
 - D. Freezer burn
25. At sea level, the constant flow restrictor meters the oxygen flow into the BioPak 240 R at an average of $1.80 \pm .13$ _____ per minute
- A. PSIG
 - B. Pounds
 - C. Liters
 - D. Inches of Water Column
26. The Oxygen cylinder must be refilled with
- A. 3000 psig (200 bar) of medical or aviation grade oxygen
 - B. 3000 psig (200 bar) of compressed air
 - C. 3000 psig (200 bar) of welders grade oxygen
 - D. 3000 psig (200 bar) of nitrogen
27. Under extremely heavy work conditions, if the user inhales and draws the diaphragm as far as it can travel, it activates the
- A. By-Pass Valve
 - B. Demand Valve
 - C. Relief Valve
 - D. Check Valve
28. If the BioPak 240R malfunctions and is not able to provide oxygen to the breathing chamber, the user can still manually fill the chamber by activating the
- A. Emergency By-Pass Valve
 - B. Demand Valve
 - C. Relief Valve
 - D. Check Valve
29. When the user exhales and moves the diaphragm as far as it can travel, it activates the
- A. By-Pass Valve
 - B. Demand Valve
 - C. Relief Valve
 - D. Check Valve

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30. When wearing the BioPak 240 R the breathing gases travel
- A. Out of the speech diaphragm.
 - B. In both directions at the same time
 - C. Out the right side of the face-mask
 - D. In the left side of the face-mask
 - E. C & D
31. The BioPak 240 R has three levels of pressures. Match lettered pressure level all of the numbered descriptions.
- | | |
|--------------------------|----------------------------|
| A. High Pressure _____ | 1. Breathing loop pressure |
| B. Medium Pressure _____ | 2. Cylinder pressure |
| C. Low Pressure _____ | 3. Regulated pressure |
| | 4. Manifold pressure |
| | 5. Gauge line pressure |
32. The function of the three flat sponge sections inside the center-section is:
- A. Provides a baffle for the oxygen
 - B. Moisture control
 - C. Aids in cooling breathing gas
 - D. B & C
33. The function of the moisture pad provided with each CO₂ scrubber set is:
- A. Humidify the breathing gas
 - B. Absorb and retain free water in the breathing loop
 - C. Provide moisture for the CO₂ absorption reaction
 - D. A & B
34. The CO₂ absorbent cartridges can be:
- A. Exposed to ambient air for up to 20 minutes
 - B. Installed after donning and under oxygen
 - C. Installed with the facepiece adapter removed
 - D. Reused after only 2 hours of use the following week
 - E. None of the above
35. If you hear the Demand Valve hit 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 it for a better seal
36. The purpose of the BioPak 240 Revolution's flow test is to ensure:
- A. The RMS battery is functional
 - B. Carbon Dioxide is not present
 - C. The correct amount of Oxygen is metered out
 - D. The vent/relief valve is functioning
37. Which of the following is **FALSE**:
- A. Flow rate test results are dependent on both cylinder pressure and elevation
 - B. The flow test must be done with the center section lid off
 - C. Use of an unapproved flow meter will result in inaccurate readings
 - D. The flow test is performed as part of turn-around maintenance

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38. Which of the following is NOT a correct statement regarding the temperature sensor system in the BioPak 240 R:
- A. Measure breathing loop gas temperature during the first 5 minutes of use
 - B. Provide the user with an insert ice canister reminder during the first 10 minutes of use
 - C. Compares ambient and breathing loop temperatures during the first 5 minutes
 - D. Tells the user when the ice canister has thawed
39. During the Low-Pressure Leak Test the purpose the two test keys are to:
- A. Isolate the demand valve and prevent it from opening
 - B. Isolate the relief/vent valve and prevent it from opening
 - C. Create positive pressure inside the breathing loop
 - D. None, the keys should never be used during the low pressure leak test
40. The test keys should NEVER be left in the back of the BioPak 240 R during the high pressure leak test because:
- A. False leaks may show up
 - B. It causes Leak-Tec solution to enter into the breathing chamber
 - C. Excessive pressure will build up and damage the relief/vent valve or diaphragm
 - D. The magnehelic gauge will not operate correctly
41. During a successful low pressure leak test the magnehelic gauge should:
- A. Be pressurized between 6 and 8 inches of water column (15 and 20 mbar)
 - B. Allowed to stabilize so that the magnehelic gauge indicator stops climbing
 - C. Allowed to decrease 0.2 inches of water column (0.5 mbar) during the 60 seconds
 - D. Have the rubber tubing connected to the facepiece adapter and test kit port
 - E. All of the above
42. The RMS gauge and TRIM system check includes all of the following EXCEPT:
- A. Observe the TRIM color sequence and pneumatic gauge level
 - B. Listen for the Alarm horn
 - C. Check the Ice Reminder function
 - D. Battery Check
43. The completed Turn-Around Maintenance Card is attached to the:
- A. Cylinder Strap
 - B. Face Mask
 - C. In a conspicuous & consistent location.
 - D. Gauge Line
44. It is an acceptable practice to store wet moisture control sponges inside a BioPak 240 R:
- A. Yes, as long as you leave the facepiece sealing adapter off
 - B. Yes, as long as you use the BioPak 240 R within 24 hours
 - C. No, because the sponges will get too hard
 - D. No, because the sponges will mold and/or mildew
45. When the bottle pressure reaches approximately 25% of its capacity, the audible and visual alarm will activate. Which BEST describes this:
- A. 10-12 second horn only
 - B. Red light flashing only
 - C. Initial flashing red light with 10-12 second horn, followed by constant flashing red light and horn sounding that increases in frequency
 - D. All of the above

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46. What BEST describes Long-Term Maintenance testing:
- A. Delaying Turn-Around Maintenance for 30 days
 - B. High pressure leak, Vent/Relief Valve, Demand Valve, Emergency By-Pass, Low Pressure Alarm Test and Turn-Around Maintenance validation
 - C. Hydro static testing
 - D. Battery replacement

Part 3, True or False

Circle "True" or "False"

47. Any standard 9-volt battery may be used in the BioPak 240 R.
TRUE
FALSE
48. After 5-years of use, the Benchman should pay particularly close attention to the breathing diaphragm, facepiece, breathing hoses and O-ring seals.
TRUE
FALSE
49. Proper lubrication of the BioPak 240 R is essential and the seal between the oxygen cylinder and the regulator should be lubricated with Cristo-Lube
TRUE
FALSE
50. If the BioPak 240 R passes both low and high-pressure leak testing, it can be assumed that the seals are acceptable. However, it is recommended to perform a full system seal inspection and lubrication once a year or as needed.
TRUE
FALSE
51. The BioPak 240 R battery door has no special orientation and can be re-installed in either direction.
TRUE
FALSE
52. The moisture pad supplied with the carbon dioxide scrubbers is reusable providing that it is fully wrung out and dried prior to reuse.
TRUE
FALSE
53. The flow restrictor is replaced every 12-months.
TRUE
FALSE
54. The PCM canister is placed in the breathing chamber to absorb heat and changes from a solid state to a liquid state during use.
TRUE
FALSE
55. The facemask positive and negative pressure check is part of long-term maintenance.
TRUE
FALSE