

SCIENCE OF DIVING

Final Exam | A | English-Metric

Instructions: Select the best answer from the choices below.
Mark your answer on an SSI 100-Question Answer Form.

- 1. For every meter of depth in fresh water, pressure increases by:**
 - A. 0.100 bar
 - B. 0.013 bar
 - C. 1.03 bar
 - D. 0.098 bar
- 2. The greatest expansion or compression per meter happens in which depth area?**
 - A. 30m to 20m
 - B. 40m to 30m
 - C. 20m to 10m
 - D. First 10 meters
- 3. Which physical law states: "If temperature remains constant, the pressure and volume of any gas are inversely related."**
 - A. Dalton
 - B. Henry
 - C. Boyle
 - D. Archimedes
- 4. The absolute pressure at a depth of 50 meters in salt water is:**
 - A. 6.000 bar
 - B. 5.000 bar
 - C. 5.012 bar
 - D. 5.901 bar
- 5. Breathing gas consumption:**
 - A. Decreases as depth increases
 - B. Increases as depth increases
 - C. Remains the same as depth increases
 - D. Varies inversely with depth
- 6. What would be the surface air consumption rate (SAC) of a diver with a 200bar, 10 liter cylinder who uses 50bar in 10 minutes at a depth of 10 meters in the ocean?**
 - A. 25 liters / minute
 - B. 50 liters / minute
 - C. 35 liters / minute
 - D. 10 liters / minute
- 7. A diver and his / her equipment weigh 87 kg when neutrally buoyant in saltwater. To be neutrally buoyant for freshwater diving with the same equipment, he /she has to:**
 - A. Add weight
 - B. Use the same weight
 - C. Remove weight
 - D. All answers are correct
- 8. If 2 liters of air are needed in your buoyancy compensator to maintain neutral buoyancy at 10m in the ocean, what will happen to your buoyancy if you ascend 3 m without deflating:**
 - A. Your negative buoyancy will increase
 - B. There will be no change in buoyancy
 - C. You will stay neutral no matter if you ascend or descend
 - D. Your positive buoyancy will increase
- 9. At an altitude of about 5,000 meters, the atmospheric pressure is approximately:**
 - A. One half the atmospheric pressure at sea level
 - B. Twice the atmospheric pressure at sea level
 - C. One eighteenth the atmospheric pressure at sea level
 - D. Equal to the atmospheric pressure at sea level
- 10. How much breathing gas does a 15 Liter scuba cylinder contain if the filling pressure is 150 bar? The temperature remains constant!**
 - A. 3000 bar liters
 - B. 2000 bar liters
 - C. 2250 bar liters
 - D. 750 bar liters
- 11. If the volume of a gas is kept constant, what varies directly with temperature?**
 - A. The pressure
 - B. The mixing
 - C. The volume
 - D. All answers are correct
- 12. The partial pressure law (Dalton) requires the sum of the partial pressures to always be equal with which pressure?**
 - A. Hydrostatic
 - B. Atmospheric
 - C. Absolute
 - D. All answers are correct
- 13. Assuming a maximum partial pressure limitation of 1.4bar, the maximum MOD for a 40% nitrox mixture in the ocean is:**
 - A. 25 meters
 - B. 40 meters
 - C. 0.035 meters
 - D. 20 meters
- 14. Sound travels differently in water than in air. The major difference is that it travels:**
 - A. Approximately 4 times slower
 - B. Approximately 2 times faster
 - C. Approximately 4 times faster
 - D. Approximately 10 times faster

- 15. Objects do not appear the same in the underwater environment as they do on land. There are some major factors that influence this difference in appearance. These are:**
- A. Absorption and Diffusion only
 - B. Turbidity and Diffusion only
 - C. Refraction and Absorption only
 - D. Refraction, Absorption, Diffusion and Turbidity
- 16. Light changes speed underwater, because it travels from the water through the glass of the diver's mask and the air pocket in front of the eyes. This gives a magnification factor of ____ to the objects we see underwater.**
- A. 50%
 - B. None
 - C. 33%
 - D. 100%
- 17. The cardiovascular system consists of these three major components:**
- A. Heart (pump), Blood (transport medium) , Blood vessels (plumbing)
 - B. Sinuses and Lungs only
 - C. Alveoli, Veins and lungs only
 - D. Right Atrium, left Atrium and Arteries only
- 18. A lung rupture can occur with over-pressurization in water as shallow as:**
- A. 1.2m
 - B. 5.0m
 - C. 3.5m
 - D. 4.0m
- 19. As you are diving deeper, the narcotic effect of nitrogen is getting:**
- A. Less
 - B. Consistent
 - C. No answer is correct
 - D. Greater
- 20. Which of the following statements concerning heat stroke is not true?**
- A. The skin is hot
 - B. Heat stroke is an extremely serious condition
 - C. The pulse is rapid
 - D. Perspiration is profuse
- 21. How many pairs of sinuses does a person have?**
- A. Two
 - B. Six
 - C. Four
 - D. Eight
- 22. Which of the following is not a symptom of decompression sickness?**
- A. Weakness
 - B. Extreme fatigue
 - C. Cyanosis (bluish skin color)
 - D. Tingling or numb extremities
- 23. Hypothermia means a lower than normal:**
- A. Total body temperature
 - B. Body extremity temperature
 - C. Body core temperature
 - D. Body skin temperature
- 24. A physiological condition called a squeeze occurs when:**
- A. The pressure on the inside of an air space is greater than the external pressure
 - B. The pressure on the inside of an air space is increasing to equalize with the external pressure
 - C. The pressure on the outside of an closed air space is greater than the internal pressure
 - D. None of the answers are correct
- 25. Permanent hearing loss, vertigo and ringing in the ear are most likely to be the result of a ruptured:**
- A. Eardrum
 - B. Round and/or Oval Window
 - C. Eustachian Tube
 - D. Semicircular Canal
- 26. The primary symptom of ear squeeze in its initial phase is:**
- A. A pressure that will progress to severe pain if equalization is not completed
 - B. A pulling sensation in the chest
 - C. Joint and limb pain
 - D. Rapid, shallow, inefficient breathing
- 27. There are several over-expansion injuries - or injuries caused by air expanding in the lungs beyond their capacity to stretch - that you should be aware of so that you can avoid them while diving. These are:**
- A. Decompression Sickness, Barotrauma
 - B. Hypothermia, Hypoxia, Hyperoxia
 - C. Air Embolism, Mediastinal Emphysema, Subcutaneous Emphysema, Pneumothorax
 - D. Decompression Sickness, Arterial Gas Embolism and rupture of the Oval Window
- 28. If you have difficulty equalizing pressure in your ears/sinuses while descending, you should:**
- A. Return to the surface and re-initiate the descent
 - B. Ascend 2 meters and force equalization
 - C. Stop and wait until the discomfort subsides
 - D. Ascend until the pressure is relieved and then attempt equalization
- 29. Even if a diver suffers from Decompression Sickness in a remote location, you should never:**
- A. Transport the diver to a treatment facility even if that involves considerable delay
 - B. Provide oxygen first aid and watch vital signs
 - C. Provide water to drink
 - D. Recompress the diver underwater

- 30. Hypoxic hypoxia is by far the most common form of hypoxia. This condition is:**
- Where the partial pressure of oxygen in the arterial blood is too low
 - Where the partial pressure of nitrogen in the arterial blood is too low
 - Where the partial pressure of oxygen in the arterial blood is too high
 - Where the partial pressure of Nitrogen in the arterial blood is too high
- 31. When oxygen pressure in the body drops below a ppO_2 of 0.17 bar, mild symptoms of hypoxia occur. Blackout and death may occur if the ppO_2 drops to:**
- 0.21 bar
 - 0.05 bar
 - 1.6 bar
 - 0.10 bar
- 32. The most likely source of carbon monoxide in scuba cylinders is:**
- All answers are correct
 - Improperly located intake on air compressor
 - Improperly maintained air compressor
 - Oil vapors in the air compressor
- 33. The first acceptable scientific approach to decompression was performed by:**
- J.S. Boyle
 - J.S. Archimedes
 - J.S. Haldane
 - J.S. Dalton
- 34. Tissue half-time is a method used to describe the time necessary to allow the amount of gas in a particular tissue to change by:**
- 50%
 - 100%
 - 33%
 - 75%
- 35. At sea level, human body tissues are saturated with nitrogen at a partial pressure equal to:**
- The absolute pressure of air at sea level
 - The hydrostatic pressure of water at sea level
 - The partial pressure of the gas in alveolar air
 - The gauge pressure of the gas in the lungs
- 36. The amount of a gas which dissolves in a liquid is proportional to:**
- The gauge pressure of the gas mixture at sea level
 - The partial pressure of that gas
 - The water temperature
 - The amount of gas in the liquid
- 37. The term "fast tissue" refers to:**
- The ascent rate of the diver if he is too fast
 - Not well-perfused tissues
 - Slow tissues which will change on emergency ascents
 - The rate at which they absorb and eliminate nitrogen
- 38. A dive is defined as a decompression dive only if you exceed the:**
- Ascent rate
 - No-decompression limits
 - Descent rate
 - Time at the safety stop
- 39. The recommended depth and time that a diver should spend at a safety stop on all dives is:**
- 5 meters / 3-5 minutes
 - 10 meters / 1-3 minutes
 - 5 meters / 15 minutes
 - 9 meters / 3-5 minutes
- 40. According to the SSI Training Standards, diving at altitude is any dive:**
- Below 1.000 meters
 - Above 300 meters
 - Above 1.000 meters
 - Between 1.000 and 200 meters only
- 41. The process of desaturation begins if the diver:**
- Starts descending
 - Is performing a safety stop
 - Starts ascending
 - Is performing a decompression stop
- 42. Recreational divers control the desaturation process by:**
- Executing a 18m per minute ascent and making a 3-5 minute safety stop at 5m
 - Executing a 9m per minute ascent and making stage decompression stops with gas change
 - Watching their dive computer
 - Executing a 9m per minute ascent and making a 3-5 minute safety stop at 5m
- 43. On desaturation, the inert gas diffuses from the tissues into the bloodstream, from the blood into the alveolar air, and then:**
- Back into the blood stream
 - Out of the body with each exhalation
 - Into the sensor of the dive computer
 - Through the lung tissues into the mediastinum
- 44. Gases may separate out of solution to form bubbles which could lead to DCS if the diver:**
- Exceeds the non-decompression limits
 - Makes a longer than normal safety stop
 - Exceeds the ascent rate on rapid or uncontrolled ascents
 - Is performing decompression stops

- 45. A surface interval is recommended after daily, multiple dives over several days or dives that require decompression stops. SSI recommends staying out of the water for:**
- Less than 24 hours
 - More than 24 hours
 - Exactly 24 hours
 - 12 hours
- 46. Multi-level dives, in general, are those where:**
- Divers spend time at progressively deeper depths during the dive, which allows extended bottom time
 - Divers spend time at progressively shallower depths during the dive, which allows extended bottom time
 - Divers spend time at progressively shallower depths during the dive, which allows less bottom time
 - All of the answers are correct
- 47. The closer to the limits a computer has been pushed, the more:**
- Cautious a diver should be
 - Safe a diver will be
 - Deep the diver will be on the next dive
 - Often the computer needs maintenance
- 48. Doppler ultrasound equipment was used to detect the presence of bubbles which are thought to precede Decompression Sickness. These bubbles are called:**
- Silent bubbles
 - Noisy bubbles
 - Air bubbles
 - None of the answers are correct
- 49. The most comfortable, convenient and enjoyable way to dive is:**
- With your dive buddy
 - In warm water
 - With your own professionally-fitted Total Diving System
 - In clear waters
- 50. To avoid having to sit out dives, divers should always be prepared with a:**
- Spare cylinder
 - Second Total Diving System
 - Complete second delivery system
 - Extensive spare parts kit
- 51. All cylinders filled with anything other than air must be:**
- Clearly marked
 - Only used once
 - Rinsed off before filling
 - Rented from an SSI Dive Center
- 52. The task of the first-stage of a regulator system is quite simply to:**
- Reduce high-pressure air coming from the cylinder to a consistent intermediate pressure
 - Increase high-pressure air coming from the cylinder
 - Reduce high-pressure air coming from the cylinder to an increased intermediate pressure
 - Increase the intermediate pressure
- 53. The SSI Equipment Service Program is a complete maintenance program designed to keep the components of a Total Diving System:**
- Clean and usable
 - Performing reliably and to the best of their potential
 - Stored at the dive center
 - All of the answers are correct
- 54. Because divers are not always in an upright position when they need to vent air, high-quality buoyancy compensators feature:**
- Several bladders to inflate independently
 - Several dump valves at different positions
 - Several Inflators (manual and automatic)
 - Automated vent-systems
- 55. To replace the traditional weight belt, most modern buoyancy compensators have:**
- A harness
 - An inflator
 - Pockets
 - An integrated weight system
- 56. Once you have determined weight requirements, you must make certain that it is:**
- Colorful
 - Heavy
 - All fixed at one place
 - Properly distributed
- 57. All instruments must be readily accessible and the displays should be uncluttered and easy to read even in:**
- Freshwater
 - The ocean
 - Currents
 - Low light and poor visibility
- 58. Divers require accurate time, depth, ascent rate and pressure information to manage their dives. They must also be able to determine:**
- Water temperature
 - Direction of travel
 - Visibility
 - Current
- 59. Which suit provides a diver with the greatest degree of flexibility in maintaining proper body temperature?**
- Wetsuit
 - Dry Suit
 - Farmer John
 - Shorty with hood
- 60. The thermal protection afforded by wetsuits and dry suits can be enhanced by the addition of:**
- Argon as inflation gas
 - Hot water inside the suit
 - Hoods, booties and gloves
 - Back plates and harnesses

- 61. The SMB is used to communicate the diver's position to:**
- His/her dive buddy
 - Pilots
 - Other dive groups underwater
 - Topside personnel and boats
- 62. The type of cutting device selected depends on the:**
- Types of hazards that may be encountered
 - Size of the sharks in the water
 - Size of the wreck which you want to enter
 - Type of current you are going to dive
- 63. Although latest technology and good appearance are important, no aspect of equipment is more important than:**
- Color
 - Price
 - Fashionable up-to-dateness
 - Proper maintenance
- 64. Many manufacturers state that a warranty will be voided if the equipment is taken apart or altered, or if parts are replaced by anyone other than:**
- A Dive Professional
 - A self trained technician
 - The manufacturers themselves
 - A factory-authorized technician
- 65. Understanding "scuba oceanography" is important for divers, because understanding water conditions aids in:**
- Trip planning
 - Equipment set up
 - Dive planning and dive mastering
 - Emergency ascents
- 66. SSI recommends that divers do not swim in a current faster than:**
- Two knots
 - 0.5 knots
 - 0.1 knots
 - One knot
- 67. The size of waves is measured on the:**
- Horizontal distance from the crest (top) of a wave to the next wave crest
 - Vertical distance from the crest (top) of a wave to the trough (bottom)
 - Horizontal distance from the trough (bottom) of a wave to the next wave bottom
 - Vertical distance from the crest (top) of a wave to the bottom of the ocean
- 68. Near shore, the best time for diving would probably be during periods of:**
- Sunshine
 - Clear water
 - Minimal exchange of water between the tides
 - Warm water
- 69. Since most of the substrate contains various forms of living organisms, divers need to take painstaking care not to:**
- Be closer than 10 meters/30 ft
 - Trample anything
 - Be negatively buoyant
 - Dive in areas with living organisms
- 70. A helpful dive professional will inform divers at the pre-dive briefing of what potential aquatic species may be encountered and:**
- How they are easiest to avoid
 - Where they are likely to be encountered
 - How dangerous they are
 - How they can breed
- 71. Which plants make up more than 99% of the bulk of the plants produced in the oceans?**
- Seaweeds
 - Grasses
 - Phytoplankton
 - Corals
- 72. If a diver is injured by harmful sea life, it is usually because of:**
- The diver's negligence
 - The diver's ignorance
 - The diver's aggressive behavior
 - All answers are correct
- 73. Reef building corals grow best at a temperature range between:**
- 18° to 25°
 - 0° to 30°
 - 23° to 29°
 - 30° to 40°
- 74. The dinoflagellates and diatoms are the two major groups of:**
- Zooplankton
 - Corals
 - Mollusks
 - Phytoplankton
- 75. Group management procedures should include a warning to divers to be careful when moving about on land, especially on rocks at the water's edge, to avoid:**
- Damaged equipment
 - Injuries by the environment
 - Lost equipment
 - Injuries through your buddy
- 76. Soft bodied animals without "backbone" found in the waters of the world have a scientific category called:**
- Invertebrates
 - Biospheres
 - Cnidarians
 - Diatoms
- 77. The creatures capable of inflicting injury will do so only:**
- Offensively
 - Defensively
 - At night
 - On purpose

- 78. These are venomous fish that can camouflage exceedingly well with their background, and their behavior of remaining motionless make them difficult to spot:**
- The Scorpionfish and Stonefish
 - The Blue Tang and the Eels
 - Sharks and Rays
 - Barracudas and Groupers
- 79. The stinging mechanisms of jellyfish are located:**
- On the epidermis
 - On the gastrodermis
 - On the mesoglea
 - On the tentacles
- 80. Although all corals contain stinging cells, one group is the most troublesome to divers. These are called:**
- Brain corals
 - Fire corals
 - Soft corals
 - Leather corals
- 81. The absolute pressure at a depth of 40 meters in salt water is:**
- 4.084 bar
 - 5.000 bar
 - 5.012 bar
 - 4.852 bar
- 82. The ocean depth at which the partial pressure of oxygen in air equals 1.6 bar is _____ meters assuming $O_2 = 21\%$.**
- 85
 - 70
 - 55
 - 66
- 83. Breathing 0.5% carbon monoxide at a depth of 40m in the ocean is equivalent to breathing _____% of carbon monoxide at the surface.**
- 2.5
 - 2.0
 - 0.5
 - 0.25
- 84. Assuming a maximum partial pressure limitation of 1.4 bar, the maximum depth for a 32% nitrox mixture is _____ of seawater.**
- 20 m
 - 33.7 m
 - 43.7 m
 - 66 m
- 85. Nitrogen narcosis begins to affect the average diver at a depth of:**
- 12-14 meters
 - 24-36 meters
 - 30-42 meters
 - 18-30 meters
- 86. The recommended method to avoid sinus squeezes and reverse blocks is to:**
- Only use decongestants that do not produce side effects
 - Dive only when your sinuses are healthy and clear
 - Forcibly equalize the pressure in your sinuses every few meters
 - Ascend and descend slowly to allow gradual equalization
- 87. If a diver suffers DCS in a remote location, you should:**
- Provide oxygen first aid
 - Transport the diver to a treatment facility even if that involves considerable delay
 - Provide water to drink
 - All answers are correct
- 88. The percentage of oxygen needed in a gas mixture for a diver to maintain consciousness at sea level is:**
- 5%
 - 10%
 - 16%
 - 20%
- 89. The regulators that you use for your diving adventures are truly "_____" equipment.**
- Expensive
 - Cumbersome
 - Hard to find
 - Life support
- 90. A Buoyancy Control System enables you to react quickly to changing conditions while providing sufficient:**
- Comfort
 - Styling
 - Clips
 - Lift capacity
- 91. Nitrox is the term used to describe breathing gases made of oxygen/nitrogen mixes with the oxygen percentage higher than _____%.**
- 36
 - 40
 - 21
 - 32
- 92. The most common flags used to show the location of divers underwater are the:**
- Beta flag and the look-out-below flag
 - Alpha flag and the safe boaters flag
 - Recreational diver's flag and the beta flag
 - Recreational diver's flag and the alpha flag
- 93. A strong current moving away from shore through a narrow opening is called a:**
- Rip tide
 - Surge tide
 - Longshore current
 - Transitory current
- 94. An incoming tide is called a _____ and an outgoing tide is called an _____.**
- Rush; flow
 - Flood; ebb
 - Flow; rush
 - Ebb; flood

95. Sponges can be recognized by the presence of _____, attesting to the circulation of water throughout their bodies.

- A. Bumps
- B. Leaves
- C. Branches
- D. Holes

96. A current may flow one direction at the surface and in the opposite direction a few meters beneath the surface.

- A. True
- B. False
- C.
- D.

97. After a 2:45 minute surface interval as a group D diver, what is your new group designation?

- A. A
- B. B
- C. C
- D. D

98. After a surface interval, you are a D diver. You wish to make a dive to 13 meters. What is your Residual Time (RT)?

- A. 45
- B. 33
- C. 21
- D. 29

99. What would your minimum surface interval be if you wanted to make two dives to 18 meters for 30 minutes each?

- A. 1:16
- B. 2:00
- C. 2:29
- D. 2:39

100. What is the maximum allowed time on a dive to 16 meters after a dive to 22 meters for 30 minutes and a 1:45 surface interval?

- A. 45 minutes
- B. 35 minutes
- C. 20 minutes
- D. 30 minutes

SCIENCE OF DIVING

Final Exam | B | English-Metric

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 - Decompression Sickness, Barotrauma
 - Hypothermia, Hypoxia, Hyperoxia
 - Decompression Sickness, Arterial Gas Embolism and rupture of the Oval Window
- 27. A lung rupture can occur with over-pressurization in water as shallow as:**
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 - 3.5m
 - 1.2m
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 - 75%
- 35. Doppler ultrasound equipment was used to detect the presence of bubbles which are thought to precede Decompression Sickness. These bubbles are called:**
- Noisy bubbles
 - Air bubbles
 - Silent bubbles
 - None of the answers are correct
- 36. The closer to the limits a computer has been pushed, the more:**
- Safe a diver will be
 - Cautious a diver should be
 - Deep the diver will be on the next dive
 - Often the computer needs maintenance
- 37. The recommended depth and time that a diver should spend at a safety stop on all dives is:**
- 10 meters / 1-3 minutes
 - 5 meters / 15 minutes
 - 9 meters / 3-5 minutes
 - 5 meters / 3-5 minutes
- 38. At sea level, human body tissues are saturated with nitrogen at a partial pressure equal to:**
- The absolute pressure of air at sea level
 - The partial pressure of the gas in alveolar air
 - The hydrostatic pressure of water at sea level
 - The gauge pressure of the gas in the lungs
- 39. Multi-level dives, in general, are those where:**
- Divers spend time at progressively shallower depths during the dive, which allows extended bottom time
 - Divers spend time at progressively deeper depths during the dive, which allows extended bottom time
 - Divers spend time at progressively shallower depths during the dive, which allows less bottom time
 - All of the answers are correct
- 40. Gases may separate out of solution to form bubbles which could lead to DCS if the diver:**
- Exceeds the non-decompression limits
 - Exceeds the ascent rate on rapid or uncontrolled ascents
 - Makes a longer than normal safety stop
 - Is performing decompression stops
- 41. The first acceptable scientific approach to decompression was performed by:**
- J.S. Boyle
 - J.S. Archimedes
 - J.S. Haldane
 - J.S. Dalton
- 42. The amount of a gas which dissolves in a liquid is proportional to:**
- The gauge pressure of the gas mixture at sea level
 - The water temperature
 - The amount of gas in the liquid
 - The partial pressure of that gas
- 43. A dive is defined as a decompression dive only if you exceed the:**
- Ascent rate
 - No-decompression limits
 - Descent rate
 - Time at the safety stop
- 44. Recreational divers control the desaturation process by:**
- Executing a 18m per minute ascent and making a 3-5 minute safety stop at 5m
 - Executing a 9m per minute ascent and making stage decompression stops with gas change
 - Executing a 9m per minute ascent and making a 3-5 minute safety stop at 5m
 - Watching their dive computer

- 45. The process of desaturation begins if the diver:**
- Starts descending
 - Starts ascending
 - Is performing a safety stop
 - Is performing a decompression stop
- 46. According to the SSI Training Standards, diving at altitude is any dive:**
- Below 1.000 meters
 - Above 300 meters
 - Above 1.000 meters
 - Between 1.000 and 200 meters only
- 47. The term "fast tissue" refers to:**
- The rate at which they absorb and eliminate nitrogen
 - The ascent rate of the diver if he is too fast
 - Not well-perfused tissues
 - Slow tissues which will change on emergency ascents
- 48. A surface interval is recommended after daily, multiple dives over several days or dives that require decompression stops. SSI recommends staying out of the water for:**
- More than 24 hours
 - Less than 24 hours
 - Exactly 24 hours
 - 12 hours
- 49. Which suit provides a diver with the greatest degree of flexibility in maintaining proper body temperature?**
- Wetsuit
 - Farmer John
 - Dry Suit
 - Shorty with hood
- 50. All cylinders filled with anything other than air must be:**
- Only used once
 - Rinsed off before filling
 - Rented from an SSI Dive Center
 - Clearly marked
- 51. The most comfortable, convenient and enjoyable way to dive is:**
- With your own professionally-fitted Total Diving System
 - With your dive buddy
 - In warm water
 - In clear waters
- 52. To avoid having to sit out dives, divers should always be prepared with a:**
- Extensive spare parts kit
 - Spare cylinder
 - Second Total Diving System
 - Complete second delivery system
- 53. To replace the traditional weight belt, most modern buoyancy compensators have:**
- A harness
 - An integrated weight system
 - An inflator
 - Pockets
- 54. Many manufacturers state that a warranty will be voided if the equipment is taken apart or altered, or if parts are replaced by anyone other than:**
- A Dive Professional
 - A factory-authorized technician
 - A self trained technician
 - The manufacturers themselves
- 55. The SMB is used to communicate the diver's position to:**
- His/her dive buddy
 - Pilots
 - Other dive groups underwater
 - Topside personnel and boats
- 56. Although latest technology and good appearance are important, no aspect of equipment is more important than:**
- Color
 - Price
 - Fashionable up-to-dateness
 - Proper maintenance
- 57. All instruments must be readily accessible and the displays should be uncluttered and easy to read even in:**
- Freshwater
 - The ocean
 - Currents
 - Low light and poor visibility
- 58. The thermal protection afforded by wetsuits and dry suits can be enhanced by the addition of:**
- Argon as inflation gas
 - Hoods, booties and gloves
 - Hot water inside the suit
 - Back plates and harnesses
- 59. The type of cutting device selected depends on the:**
- Size of the sharks in the water
 - Types of hazards that may be encountered
 - Size of the wreck which you want to enter
 - Type of current you are going to dive
- 60. Once you have determined weight requirements, you must make certain that it is:**
- Colorful
 - Heavy
 - Properly distributed
 - All fixed at one place
- 61. Because divers are not always in an upright position when they need to vent air, high-quality buoyancy compensators feature:**
- Several bladders to inflate independently
 - Several Inflators (manual and automatic)
 - Automated vent-systems
 - Several dump valves at different positions

- 62. The task of the first-stage of a regulator system is quite simply to:**
- Reduce high-pressure air coming from the cylinder to a consistent intermediate pressure
 - Increase high-pressure air coming from the cylinder
 - Reduce high-pressure air coming from the cylinder to an increased intermediate pressure
 - Increase the intermediate pressure
- 63. The SSI Equipment Service Program is a complete maintenance program designed to keep the components of a Total Diving System:**
- Clean and usable
 - Stored at the dive center
 - All of the answers are correct
 - Performing reliably and to the best of their potential
- 64. Divers require accurate time, depth, ascent rate and pressure information to manage their dives. They must also be able to determine:**
- Water temperature
 - Visibility
 - Current
 - Direction of travel
- 65. The stinging mechanisms of jellyfish are located:**
- On the epidermis
 - On the gastrodermis
 - On the tentacles
 - On the mesoglea
- 66. The size of waves is measured on the:**
- Horizontal distance from the crest (top) of a wave to the next wave crest
 - Horizontal distance from the trough (bottom) of a wave to the next wave bottom
 - Vertical distance from the crest (top) of a wave to the bottom of the ocean
 - Vertical distance from the crest (top) of a wave to the trough (bottom)
- 67. The creatures capable of inflicting injury will do so only:**
- Offensive
 - Defensively
 - At night
 - On purpose
- 68. Soft bodied animals without "backbone" found in the waters of the world have a scientific category called:**
- Biospheres
 - Cnidarians
 - Invertebrates
 - Diatoms
- 69. Reef building corals grow best at a temperature range between:**
- 18° to 25°
 - 23° to 29°
 - 0° to 30°
 - 30° to 40°
- 70. Near shore, the best time for diving would probably be during periods of:**
- Sunshine
 - Minimal exchange of water between the tides
 - Clear water
 - Warm water
- 71. These are venomous fish that can camouflage exceedingly well with their background, and their behavior of remaining motionless make them difficult to spot:**
- The Blue Tang and the Eels
 - Sharks and Rays
 - The Scorpionfish and Stonefish
 - Barracudas and Groupers
- 72. The dinoflagellates and diatoms are the two major groups of:**
- Zooplankton
 - Corals
 - Mollusks
 - Phytoplankton
- 73. If a diver is injured by harmful sea life, it is usually because of:**
- The diver's negligence
 - The diver's ignorance
 - All answers are correct
 - The diver's aggressive behavior
- 74. Although all corals contain stinging cells, one group is the most troublesome to divers. These are called:**
- Brain corals
 - Soft corals
 - Leather corals
 - Fire corals
- 75. Group management procedures should include a warning to divers to be careful when moving about on land, especially on rocks at the water's edge, to avoid:**
- Damaged equipment
 - Injuries by the environment
 - Lost equipment
 - Injuries through your buddy
- 76. Understanding "scuba oceanography" is important for divers, because understanding water conditions aids in:**
- Dive planning and dive mastering
 - Trip planning
 - Equipment set up
 - Emergency ascents
- 77. A helpful dive professional will inform divers at the pre-dive briefing of what potential aquatic species may be encountered and:**
- How they are easiest to avoid
 - Where they are likely to be encountered
 - How dangerous they are
 - How they can breed

- 78. SSI recommends that divers do not swim in a current faster than:**
- One knot
 - Two knots
 - 0.5 knots
 - 0.1 knots
- 79. Since most of the substrate contains various forms of living organisms, divers need to take painstaking care not to:**
- Be closer than 10 meters/30 ft
 - Be negatively buoyant
 - Dive in areas with living organisms
 - Trample anything
- 80. Which plants make up more than 99% of the bulk of the plants produced in the oceans?**
- Seaweeds
 - Phytoplankton
 - Grasses
 - Corals
- 81. A Buoyancy Control System enables you to react quickly to changing conditions while providing sufficient:**
- Comfort
 - Lift capacity
 - Styling
 - Clips
- 82. An incoming tide is called a _____ and an outgoing tide is called an _____.**
- Rush; flow
 - Flow; rush
 - Ebb; flood
 - Flood; ebb
- 83. A current may flow one direction at the surface and in the opposite direction a few meters beneath the surface.**
- True
 - False
 -
 -
- 84. The regulators that you use for your diving adventures are truly "_____ " equipment.**
- Expensive
 - Life support
 - Cumbersome
 - Hard to find
- 85. Nitrox is the term used to describe breathing gases made of oxygen/nitrogen mixes with the oxygen percentage higher than ____%.**
- 36
 - 40
 - 32
 - 21
- 86. Breathing 0.5% carbon monoxide at a depth of 40m in the ocean is equivalent to breathing ____% of carbon monoxide at the surface.**
- 2.0
 - 2.5
 - 0.5
 - 0.25
- 87. The absolute pressure at a depth of 40 meters in salt water is:**
- 4.084 bar
 - 5.012 bar
 - 4.852 bar
 - 5.000 bar
- 88. Nitrogen narcosis begins to affect the average diver at a depth of:**
- 12-14 meters
 - 18-30 meters
 - 24-36 meters
 - 30-42 meters
- 89. Assuming a maximum partial pressure limitation of 1.4 bar, the maximum depth for a 32% nitrox mixture is _____ of seawater.**
- 20 m
 - 43.7 m
 - 66 m
 - 33.7 m
- 90. The ocean depth at which the partial pressure of oxygen in air equals 1.6 bar is _____ meters assuming $O_2 = 21\%$.**
- 85
 - 70
 - 55
 - 66
- 91. The recommended method to avoid sinus squeezes and reverse blocks is to:**
- Only use decongestants that do not produce side effects
 - Forcibly equalize the pressure in your sinuses every few meters
 - Dive only when your sinuses are healthy and clear
 - Ascend and descend slowly to allow gradual equalization
- 92. The most common flags used to show the location of divers underwater are the:**
- Beta flag and the look-out-below flag
 - Alpha flag and the safe boaters flag
 - Recreational diver's flag and the beta flag
 - Recreational diver's flag and the alpha flag
- 93. If a diver suffers DCS in a remote location, you should:**
- All answers are correct
 - Provide oxygen first aid
 - Transport the diver to a treatment facility even if that involves considerable delay
 - Provide water to drink
- 94. A strong current moving away from shore through a narrow opening is called a:**
- Surge tide
 - Rip tide
 - Longshore current
 - Transitory current

95. The percentage of oxygen needed in a gas mixture for a diver to maintain consciousness at sea level is:

- A. 5%
- B. 16%
- C. 20%
- D. 10%

96. Sponges can be recognized by the presence of ____, attesting to the circulation of water throughout their bodies.

- A. Holes
- B. Bumps
- C. Leaves
- D. Branches

97. After a 2:45 minute surface interval as a group D diver, what is your new group designation?

- A. A
- B. B
- C. C
- D. D

98. What would your minimum surface interval be if you wanted to make two dives to 18 meters for 30 minutes each?

- A. 1:16
- B. 2:00
- C. 2:39
- D. 2:29

99. After a surface interval, you are a D diver. You wish to make a dive to 13 meters. What is your Residual Time (RT)?

- A. 45
- B. 33
- C. 29
- D. 21

100. What is the maximum allowed time on a dive to 16 meters after a dive to 22 meters for 30 minutes and a 1:45 surface interval?

- A. 45 minutes
- B. 35 minutes
- C. 20 minutes
- D. 30 minutes