

Scuba IQ Review Answer Keys

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Chapter 1:

Scuba I.Q. Review

1. What does the term “self-reliant” diver mean?

The ability to look after all your problems underwater without assistance from your buddy

2. A diver’s sense of awareness underwater is made up of what two components?

Self awareness

Global awareness

3. List three essential parts of a good dive plan.

Physical preparation

Mental preparation

Equipment preparation

4. What two broad categories of options describe responses to out-of-air emergencies?

Buddy Dependent

Buddy Independent

5. When might a diver favor a buddy-independent response to a buddy-dependent response in an out-of-air emergency?

In depths of less than 30ft (9m), the surface is only seconds away; considering the time it might take to employ another option, a direct ascent might make more sense with less risk to either diver

6. Describe two self-rescue options for an out-of-air diver at a depth of 20’ (6 m).

Redundant Supply Ascent

Direct Ascent

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Chapter 2:

Scuba I.Q. Review

1. What are some common sources of pre-dive stress?

Diving in new and unfamiliar sites

Adverse conditions

New diving activities (such as first night dive)

Peer pressure

Diving with a new buddy

Using new or unfamiliar equipment

2. How might you recognize stress in your dive buddy?

Withdrawal

Hyperactivity

Constant talking

Gear fumbling

Inappropriate or dark humor

Moodiness

3. Describe some ways you might help reduce pre-dive stress in yourself and a buddy.

Separate fact from fiction,

Conduct a good dive briefing

Conduct a good buddy check

Talk to the dive leaders

Visualize the dive

4. How can visualization be helpful to a scuba diver?

Can be used to forecast possible events, to prepare for the unexpected events of the dive, having an idea of what might go wrong at critical moments will help you consider an appropriate response before the problem arises.

5. What factors may cause stress and panic in a diver while underwater?

Poor visibility

Cold temperatures

An out of air emergency

Over exertion and/or breathing difficulty

Leaking mask

Buddy separation

Inability to keep buoyancy under control

The feeling of general discomfort in the water combined with a sense of inability to help themselves out of a crisis

6. What dangers does the rescuer face when attempting to help a panicky diver?

The possibility of loss of the regulator and mask, dropped weight belt and an exhausting struggle

7. Why do alterations in breathing patterns affect a struggling or panicky diver?

It increases the feeling of suffocation and panic. This condition will rapidly result in exhaustion due to hypoxia (lowered blood level of oxygen) and the increasing sensation of air starvation due to the elevated level of the "trigger gas", carbon dioxide.

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Chapter 3:**Scuba I.Q. Review**

1. List four common problems that may lead to diving accidents.

Exceeding prior experience and training

Cold or tired diver

Muscle cramps

Overweighting

Currents

Equipment

2. Relative to the observer on the shore, in which direction do the tides run?

Parallel to the shoreline

3. What is one way of solving the problem of divers being unable to swim back to the dive boat against the current?

Trail a long, floating drift line aft of the boat.

Run a water level line from the entry point to the descent line.

4. What are rip currents? How are they formed?

Rips are relatively high-speed currents that move out to sea from the shore. They may be produced by high tide waters accumulating behind barrier reefs and then flowing to the sea with great force as the tide changes. Rips may also be produced by currents that move parallel to the shoreline.

5. Describe the danger of strainers to river divers.

The diver can become entangled or caught in debris and unable to free

themselves due to the current holding the diver in place.

6. Why are low-head dams and other hydraulics so dangerous to divers?

A diver may be carried to and pinned on the bottom by the relentless current.

7. The water need not be freezing cold for a free-flow or freeze up to occur.

Why is this so?

A deep dive with its associated high air demands and thus cooling effect of air passing through valve stems, may be sufficient to cause ice to form.

8. What kinds of injuries might you expect to find on a diver struck by a boat?

Head injuries are a typical result though broken arms, collarbones and neck injuries are frequent as well.

9. List the four ways in which our bodies lose heat to the environment.

Perspiring and losing heat through evaporation

Warming the air in contact with the skin (conduction)

Removing warm air from around skin (convection)

Emitting infrared radiation

10. Describe the two main methods the body uses to manage heat loss in cold water.

Shivering

The brain constricts the blood vessels under the skin, and directs the blood primarily towards the lungs and major organs

11. Discuss the dangers of diving in overhead environments without specialized training.

No direct access to the surface

Disorientation

Silt-out

Falling objects

Entanglement hazards

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Chapter 4:

Scuba I.Q. Review

1. What signs might signal to an observer that a diver on the surface may be in distress?

Encountering or observing a diver alone, divers observed in unlikely areas, unusual bubble patterns, a diver at the surface who is either very high or very low in the water

2. Why is a reaching or throwing response the preferred way of assisting a diver to shore or to the boat?

This keeps us from having to enter the water and is actually a speedier response

3. Why is it prudent to stop at least 15 ft. (5 m) away from a diver whom you think might be having problems?

To observe the behavior of the victim and insure they are in control

4. Why is panic the leading cause of diver accidents?

A panicked diver loses self-control and as such is unable to take care of himself

5. What are the best steps to follow in assisting a panicked or struggling diver?

Approach the diver cautiously, talking to the diver; watch your own safety; establish the diver's buoyancy; assist to safety

6. The most likely rescue scenario in aiding a fellow diver is...?

A tired diver assist

7. An unconscious, breathing diver on the surface is in extreme danger of?

Inhalation of water, and drowning

8. How do we determine if a person is breathing?

Look, listen, and feel; the victim's skin color also may be a good indication of respiration

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Chapter 5:

Scuba I.Q. Review

1. What indicators might warn you that your buddy may be experiencing problems?
Poor buoyancy control, irregular breathing pattern, erratic or jerky movements, not maintaining buddy contact, disorientation
2. What are the watchwords to keep in mind in any underwater problem?
Stop your activity, keep your self-control and consider your options
3. Describe the carotid sinus reflex.
When external pressure is applied to the carotid arteries or to the sinuses themselves, the sinuses will react with a reduction in blood pressure and thus a reduction in oxygen to the brain
4. What is the danger of carbon monoxide contamination in a diver's air supply?
CO binds readily to hemoglobin, more so than oxygen, leading to insufficient oxygen to vital organs
5. What is the best way to deal with nitrogen narcosis problems?
Narcosis passes quickly as the diver rises to shallower depths and disappears completely on ascent
6. Describe the physics of an ear squeeze.
An imbalance of pressure outside pressing on the eardrum and causing it to flex inward
7. Why is the BC a factor in dry suit squeezes?
Divers who use their BC to control their buoyancy may suffer a suit squeeze if air is not added to the suit
8. What is a barotrauma?
Any pressure related injury

9. Why is recommended ascent rate only 30 ft (9 m) per minute?

Most dive computers have an ascent rate of 30 ft per minute, allowing the diver's physiology to catch up with the physics

10. List some contributing factors to the occurrence of decompression sickness.

Dehydration

Hypothermia and heat related injuries

Working hard

Poor physical condition

Heavy smoking

Alcohol abuse or abuse of other drugs

Fatigue before the dive

Obesity

Dive conditions

11. What is the difference between Type I and Type II bends?

Type I: May produce a rash like reddening of the skin, usually on the upper body and arms and may be accompanied by mild, transient joint pain; joint pain is more common and often exists in the absence of skin involvement

Type II: Any sign that demonstrates impairment of motor skills, thought process, or behavior

12. What is the on-scene treatment of choice in the event of decompression sickness?

Keep the victim calm, cool and relaxed. Deliver high flow oxygen to the victim for as long as possible during transport to a dive physician

13. How does a lung over-expansion injury happen?

Temporary or permanent lung blockage, breath holding

14. List the most common signs and symptoms of a lung over-expansion injury.

Shortness of breath, pain in the center of the chest, rapid erratic pulse, signs and symptoms of shock, swelling around the neck, possible voice changes

15. Why is a lung over-expansion injury immediately life threatening?

Bubbles of air that escape from the lungs can travel to all parts of the body

16. Why is decompression sickness a venous gas embolism and bubbles in the blood from a lung over-expansion injury an arterial gas embolism?

Arterial gas embolism takes place on the arterial side of the circulation as air moves through the alveoli into the blood, as opposed to DCS nitrogen bubbles on the venous side of the circulation where bubbles form as the nitrogen is moving out of the tissues and back towards the lungs

17. Describe the signs and symptoms of a venomous puncture wound from a lionfish or stonefish.

Punctures from the spines produce an immediate intense pain that persists for many hours; the victim may show signs of weakness, nausea and vomiting; cardiac arrest is possible

18. Describe how you would handle the tentacles of a stinging jellyfish.

With gloves

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Chapter 6:

Scuba I.Q. Review

1. Why is good, general dive site organization a benefit in the event of a diving accident?

The security of knowing that all support persons are practiced and rehearsed in their roles

2. List and explain the four R's of the emergency plan.

Recognize

Respond

Rescue

Record

3. Who is the most important person on the accident scene?

You are the most important person on the accident scene

4. What is meant by the A, B, C's of the Primary Survey?

Airway

Breathing

Circulation

5. What are the indications that CPR should be begun on a diving accident victim?

You have established that the victim is not breathing, and has no pulse or other signs of life (not specifically stated in text)

6. What will we measure and record on the Secondary Survey?

Vital signs

Level of consciousness

Patient evaluation

7. Describe the steps in a field neurological examination.

Orientation

Muscle Strength

Eyes

Sensory

Swallowing reflex

8. How often should the Secondary Survey and neuro exam be repeated?

Every 15 minutes

9. What is shock and how do we treat it?

Shock: because of loss of fluids, the body is unable to provide blood and oxygen to all tissues; the brain then switches circulation away from the other tissues and directs it only to itself, the heart and lungs

Treatment: calm and reassure the patient, determine and treat the cause of the shock reaction, victim should be placed on his back with his feet slightly elevated, remove wetsuit hood and loosen suit, monitor vitals closely, maintain an open airway and watch for vomiting, give oxygen and get help

10. Why is oxygen therapy so valuable in treating diving injuries?

Oxygen may diminish the size of nitrogen bubbles in DCS, easing pains and diminishing long term tissue damage; it can also reduce the size of air bubbles in AGE, as well as help preserve tissue cut off from direct blood flow

11. List and describe the main methods of delivering oxygen to the patient.

Nasal cannula

Non-rebreather mask with reservoir bag

Demand type regulator

12. How do we recognize hypothermia?

A diver suffering from moderate hypothermia will be shivering violently, be somewhat cyanotic, may slur his speech, have difficulty walking and will appear weak

13. What are the signs and symptoms of heat exhaustion and heat stroke?

Heat Exhaustion: the diver will be pale and sweating profusely in a desperate attempt to cool himself and will be beginning to suffer from fluid loss as well

Heat Stroke: the victim will be listless, possibly unresponsive, with a rapid, stronger than normal pulse (bounding) rapid breathing and the skin will be hot, red, and dry

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Chapter 7:

Scuba I.Q. Review

1. What kinds of information do we need to gather to plan an underwater search?

The last known point and where the buddy surfaced; the circumstances of the dive; how deep they were diving; how long they had been in the water; and how much air the lost diver had left in his tank

2. List the three major components in any underwater search pattern.

Define a search area

Define a start point

Define a stop point

3. When might we use free-swimming divers to conduct random searches?

Along shorelines where there are many rocky outcrops and coves, or where underwater there are crevices and overhangs, or anywhere kelp is long and subject to swaying from the surge

4. How would you bring a conscious, but confused diver to the surface?

Signal the diver OK, slow down and take a couple of breaths to relax; approach the diver, then gently and firmly grasp him under the arm while signaling to ascent with your other hand; if he fails to vent his BC you'll have to do this for him as well as yourself; maintain control and continue to signal the diver to relax and breathe normally; monitor the diver constantly and communicate with him frequently; ascend at as normal a rate as possible by using good buoyancy control

5. If the diver is breathing, but unresponsive on the bottom, what would our main concern be as we bring him to the surface?

To make sure the victim's regulator stays in place during the ascent

6. Why is a lung over-expansion injury not a serious consideration when bringing an unconscious, non-breathing victim to the surface?

An unconscious person is not holding his breath, thus the expanding air will vent on ascent

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Chapter 8:

Scuba I.Q. Review

1. What is the value of recompression in decompression sickness accidents?

Subjecting the diver to pressure shrinks the bubbles; with sufficient pressure, gas bubbles can be forced back into solution, resolving the illness

2. What is the difference between decompression chambers and recompression chambers?

The only distinction is the application or use of the chamber

3. How does a chamber simulate descending to depth?

Diving is simulated by pumping pressurized air into the chamber and, thereby increasing the ambient pressure, until the desired "depth" is reached

4. Do you know where the nearest chamber is to your frequent dive sites?
(class discussion)

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