

# **PADI Open Water Diver Course:**

## **Study Questions and Answers**

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## Unit I

- 1 Q) What will the buoyancy of an object be (positive, neutral, or negative) if it displaces an amount of water:
  - more than its own weight?
  - less than its own weight?
  - equal to its own weight?
- A) The buoyancy of the object will be:
  - Positive
  - Negative
  - Neutral
- 2 Q) Why is buoyancy control, both at the surface and underwater, one of the most important skills a diver can master?  
A) It lets you control where you are in the water. At the surface, positive buoyancy lets you rest and save energy. Underwater, you'll remain neutrally buoyant most of the time so you can swim effortlessly and move freely in all directions and stay off of the bottom.
- 3 Q) What two items control a diver's buoyancy?  
A) Lead weights and a buoyancy control device (BDC).
- 4 Q) How does the buoyancy of an object differ in fresh water compared to salt water?  
A) Objects are more buoyant in salt water because the dissolved salts increase the density of the water.
- 5 Q) How does lung volume affect buoyancy?  
A) Exhaling decreases buoyancy and inhaling increases buoyancy.
- 6 Q) Why do you usually only feel changing pressure in your body's air spaces?  
A) Your body is primarily liquid, which is incompressible and distributes pressure equally throughout your entire body. Air is compressible so the air spaces in your body change volume unless the pressure is equalized.
- 7 Q) Why are pressure changes while ascending or descending underwater much more substantial than pressure changes when ascending or descending the same distance in air?  
A) Because water is denser than air, pressure changes more rapidly for a given distance ascent or descent.
- 8 Q) What is the relationship between increasing and decreasing depth and water pressure?  
A) Every ten meters of water adds one atmosphere.

9 Q) What are the absolute pressures, in atmospheres or bar, for:

- 10 meters / 33 feet?
- 20 meters / 66 feet?
- 30 meters / 99 feet?
- 40 meters / 132 feet?

A) The absolute pressures are:

- 1 atm
- 2 atm
- 3 atm
- 4 atm

10 Q) What is the relationship between air volume and density, and how do they vary according to this relationship when pressure increases or decreases?

A) The volume is inversely proportional (1:1) to pressure.  $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$ , so density is proportional to pressure.  $V_d = \frac{V_i}{D/10+1}$ .

11 Q) What are the three major air spaces affected by pressure?

A) The two major air spaces within your body most noticeably affected by increasing pressure are your ears and sinuses. The major artificial air space most affected by increasing pressure is the one created by your mask.

12 Q) What is a “squeeze?”

A) Squeeze is when the water pressure compresses the air in your body air spaces and the volume decreases, pushing body tissues in.

13 Q) What is “equalization?”

A) Keeping the volume in air spaces normal by adding air to it during descent, which keeps the air space pressure equal to the water pressure outside.

14 Q) What are three ways you can equalize air spaces during descent?

A) Your ear and the sinus air spaces connect to the throat, allowing you to use air from your lungs to equalize them. You equalize the air space in your mask through your nose. To equalize the air space in your ears, pinch your nose shut and gently blow against it with your mouth closed; this directs air from your throat into your ears and sinus air spaces. Another technique is swallowing and wiggling the jaw from side to side. A third technique combines these – swallowing and wiggle your jaw while blowing gently against your pinched nose.

15 Q) How often should you equalize during descent?

A) Every meter.

- 16 Q) What three steps should you take if you feel discomfort in an air space while descending?  
A) Ascend until the discomfort eases, equalize and continue a slow descent equalizing more frequently.
- 17 Q) What is the most important rule in scuba diving?  
A) The most important rule in scuba diving is to breathe continuously and never, never hold your breath.
- 18 Q) What are the consequences of breaking the most important rule in scuba diving?  
A) Lung over pressurization, will occur unless you permit the pressure to equalize by breathing normally at all times. Lung over expansion can force air into the bloodstream and chest cavity, which can lead to severe injuries including paralysis and death.
- 19 Q) What is a “reverse block?”  
A) A reverse block occurs when expanding air cannot escape from an air space during ascent.
- 20 Q) What should you do if you feel discomfort during ascent due to air expansion in the ears, sinuses, stomach, intestines, or teeth?  
A) Slow or stop your ascent, descend a meter and give the trapped air time to work its way out.
- 21 Q) How does increasing depth affect how long your air supply lasts?  
A) Your air supply does not last as long at increasing depths because the air supplied by the SCUBA equipment is denser.
- 22 Q) What's the most efficient way to breathe dense air underwater?  
A) Take deep slow breaths.
- 23 Q) Why does a diver need a mask?  
A) You need a mask to see underwater because light behaves differently in water.
- 24 Q) Why does the mask need to enclose your nose?  
A) The mask creates an air space that must be equalized during descent. The enclosed nose provides a means to equalize the pressure.
- 25 Q) What six features should you look for in a mask?  
A) The six features are:
  1. Tempered-glass lens plate
  2. Comfortable skirt with a close fit to your face
  3. Nose or finger pockets to make equalizing your ears easier
  4. Low-profile. Lower-profile means less air is required to equalize and a wider vision field
  5. Adjustable strap that can be locked in place
  6. Wide field of vision. Low-profile or wrap around designs give this

- 26 Q) When buying a mask, what are the two most important factors?  
A) Fit and comfort.
- 27 Q) How do you prepare a new mask for use?  
A) Remove the film from manufacturing using a soft cloth and non-gel toothpaste or other low abrasion cleaner with fine grit that can remove the film without scratching the glass.
- 28 Q) What three general maintenance procedures apply to mask care?  
A) Rinse thoroughly with fresh water after each use (even in a swimming pool), keep out of direct sunlight, and store in a cool, dry place.
- 29 Q) Why does a diver need a snorkel?  
A) It lets you rest or swim with your face in the water, like when you're looking for something below, without wasting cylinder air. When there's a bit of surface chop, splashing waves can get in your mouth if you don't have a snorkel, but the snorkel is usually high enough to get above these. If you run low on air away from the boat or shore, it makes it easier to swim back, again resting with your face in the water.
- 30 Q) What three features does an easy-breathing snorkel have?  
A) The three features are:
  1. A large bore
  2. Not excessively long – if it's too long it's hard to clear
  3. Designed with smooth, rounded bends
- 31 Q) When purchasing a snorkel, how do you check it for fit and comfort?  
A) Place the snorkel in your mouth with the mouthpiece flange between your lips and teeth, and the barrel of the snorkel against your left ear. You should be able to adjust the mouthpiece to fit comfortably, without chaffing or causing jaw fatigue, while sitting straight in your mouth.
- 32 Q) How do you prepare a new snorkel for use?  
A) Attach the snorkel to the left side of your mouth so the top of the snorkel sits at the crown of your head.
- 33 Q) Why does a diver need fins?  
A) They help you move more effectively by letting you use your leg muscles to swim.
- 34 Q) What are the two basic fin styles?  
A) Adjustable strap and full-foot.
- 35 Q) What blade design features may enhance a fin's performance?  
A) Ribs, vents, channels, and split fins are all features which may enhance fin's performance.
- 36 Q) How do you prepare new fins for use?  
A) Adjust the straps for a snug, comfortable fit with your wet-suit boots on.

- 37 Q) What three considerations do you have when buying a specific type of fin?
- A) Your size, physical ability, and where you intend to use them. Your primary concerns are fit and comfort.
- 38 Q) Why does a diver need a BCD?
- A) To regulate your buoyancy while underwater and for providing positive buoyancy for resting, swimming, or lending assistance to others.
- 39 Q) Why do divers need a backpack?
- A) To hold the cylinder on your back.
- 40 Q) Of the three styles of BCD, which is the most commonly used by recreational divers?
- A) Jacket-style.
- 41 Q) What five features do BCDs have in common?
- A) The five features are:
1. It must hold enough air to give you and your equipment ample buoyancy at the surface
  2. It must have a large-diameter inflation/deflation hose so you can release air quickly and easily
  3. It should have a low-pressure inflation system that fills your BCD with air directly from your cylinder
  4. It must have an over pressure relief valve to prevent the BCD from rupturing due to overfilling or due to air expansion during ascent
  5. It should be adjustable enough to fit comfortably and not ride up on your body when you inflate it
- 42 Q) How do you prepare a BCD for use?
- A) Adjust the fit. Too loose and it will rotate around you, too tight and it will restrict breathing.
- 43 Q) What two special maintenance procedures apply to caring for a BCD?
- A) You need to rinse the inside as well as the outside with fresh water. To do this fill it about one third with water through the inflator hose, the the rest of the way with air. Swish the water around and drain. Store the BCD partially inflated. This keeps the bladder from sticking together internally.
- 44 Q) Why does a diver need a scuba cylinder?
- A) To safely store high-pressure air so you have something to breathe underwater.
- 45 Q) What does a cylinder valve do?
- A) To control air flow from the cylinder.

- 46 Q) With what piece of equipment is the backpack usually integrated?  
A) The BCD.
- 47 Q) What are the four common sizes and the two materials for scuba cylinders?  
A) 8, 10, 12, and 15 liters (SI); 50 71.2, and 80 ft<sup>3</sup> (imperial). Cylinders are made of aluminum or steel.
- 48 Q) What five markings do you commonly find on the neck of a scuba cylinder?  
A) The five markings are:
  1. The material the cylinder is made of
  2. The maximum permitted pressure
  3. Serial number
  4. Dates of all pressure tests
  5. Manufacturer or distributor symbol
- 49 Q) What are the two basic types of cylinder valves?  
A) K-valve (a simple on/off valve) and a J-valve (has a built-in mechanism that signals when you run low on air).
- 50 Q) What does a J-valve do, and why is its use declining?  
A) The J-valve contains a spring-operated shutoff valve that is held open by cylinder pressure until the pressure drops to approximately 20-40 bar/300-500 psi. They are not used as much anymore because they are prone to tripping (so they don't warn you), they increase the cost and service requirements of the valve, and the functionality has been replaced by the more reliable submersible pressure gauge (SPG).
- 51 Q) What's the difference between a DIN valve and a yoke valve?  
A) The yoke valve attaches the regulator via a yoke assembly. You can easily identify a yoke valve by the o-ring seal on the front of the valve and dimpled guide for the yoke on the back. The DIN valve system screws the regulator into the valve. The DIN system is rated for higher pressures.
- 52 Q) What is the purpose of a burst disc?  
A) To relieve cylinder over pressurization.
- 53 Q) What three safety precautions for handling scuba cylinders should you follow going to and at a dive site?  
A) The safety precautions are:
  - Don't leave them standing unattended
  - If they need to be standing, be sure they are secured so they can't fall
  - When carrying your cylinders in your car, lay them down horizontally and block or tie them so they cannot roll

- 54 Q) How do you turn a cylinder valve on and off?  
A) Open the valve slowly, all the way until it stops turning. Close valves gently and avoid over tightening.
- 55 Q) What's the best way to keep water out of a scuba cylinder?  
A) Never allow it to completely empty.
- 56 Q) Why do you need scuba cylinder visual inspections and pressure tests?  
A) The inspections check for rust and corrosion, the pressure test checks for metal fatigue.
- 57 Q) What does a regulator do?  
A) The regulator reduces the scuba cylinder's high pressure air to match the surrounding water pressure, and it delivers air only on demand.
- 58 Q) When looking at a regulator, which are the following parts:
  - first stage?
  - second stages?
  - dust cover?
  - purge button?A) The regulator parts are:
  - The first stage is the chrome and brass piece that connects to the cylinder
  - The second stages contain the mouth pieces and purge button
  - The dust cover is attached to the first stage
  - The purge button is located on the second stage
- 59 Q) What's the most important feature for consideration when purchasing a regulator?  
A) Ease of breathing.
- 60 Q) How do you rinse a regulator after use, and what three points do you need to keep in mind while doing so?  
A) When rinsing the regulator, keep in mind:
  1. Put the first stage dust cover firmly in place to keep water out of the first stage
  2. Do not use high-pressure water to rinse your regulator – only gently flowing water
  3. Don't press the purge button while rinsing or soaking, because this opens the second stage inlet valve and can allow water to flow up the hose into the first stage
- 61 Q) Why do divers need a submersible pressure gauge (SPG)?  
A) The SPG tells you how much air you have during a dive.

62 Q) What are the three reasons for diving with a buddy at all times?

A) The three reasons are:

1. Practicality
2. Safety
3. Fun

## Unit II

- 1 Q) How does looking at something underwater affect its apparent size?  
A) Things look larger and/or closer.
- 2 Q) How does water affect light intensity and color?  
A) Water absorbs and reflects light, so in deeper water it is darker and less colorful.
- 3 Q) How does being underwater affect hearing?  
A) Sound travels farther in water than in air, so you'll be able to hear things at distances that you can't in air. Sound also travels about four times faster in water than in air, this makes it difficult to tell where a sound comes from.
- 4 Q) How does the rate of body heat loss in water compare to the rate of body heat loss in air?  
A) Water conducts heat 20 times faster than air.
- 5 Q) What should you do if you begin to shiver continuously underwater?  
A) Get out of the water immediately, dry off, and seek warmth.
- 6 Q) How should you move underwater to compensate for the increased resistance of water?  
A) Conserve energy by moving slowly and steadily. Swim level to reduce drag. More weight means you have to use more air in your BCD, which prevents you from swimming horizontally.
- 7 Q) How do you breathe underwater for maximum efficiency?  
A) Slowly and deeply.
- 8 Q) What are eight symptoms of diving overexertion?  
A) Overexertion symptoms include fatigue, labored breathing, a feeling of suffocation, weakness, anxiety, headache, muscle cramping and a tendency to panic.
- 9 Q) How do you prevent diving overexertion?  
A) You prevent overexertion by staying relaxed and knowing your limits.
- 10 Q) What should you do if you become overexerted while diving – either at the surface or underwater?  
A) Stop all activity and rest underwater. At surface, establish buoyancy and stop moving. Once you recover, continue at a slower pace.
- 11 Q) What are four techniques used for airway control?  
A) Proper airway control means to:
  1. Always inhale slowly if water enters your regulator, snorkel or mouth, so you don't pull it into your throat
  2. Always inhale cautiously and slowly after clearing your snorkel or regulator
  3. Use your tongue as a splash guard by putting the tip on the roof of your mouth when you breath past small amounts of water
  4. Looking downward slightly helps keep the water in the second stage and out of your mouth

- 12 Q) What are the two reasons for wearing an exposure suit while diving?  
A) To reduce heat loss and to protect you from minor scrapes, stings and abrasions.
- 13 Q) How do dry suits and wet suits insulate divers?  
A) By putting a layer of insulation over your skin.
- 14 Q) Why must a wet suit fit snugly?  
A) To prevent water from circulating through it. If water circulates you lose heat to incoming cold water.
- 15 Q) What two properties may an exposure suit lose due to increased water pressure at depth?  
A) Buoyancy and insulation.
- 16 Q) What three factors should you consider when selecting an exposure suit?  
A) Insulating ability, fit, and comfort.
- 17 Q) What four procedures apply to caring for an exposure suit?  
A) Exposure suits have four basic maintenance steps:
  1. Rinse
  2. Dry inside out
  3. Store
  4. Lubricate dry suit zippers periodically
- 18 Q) Why do you need a hood and what are the three basic types of hoods?  
A) You loose body heat through your head. 75 percent if wearing a full body exposure suit, but leave your head uncovered. The three basic types are bibbed hoods, non-bibbed hoods, and hooded vests.
- 19 Q) Why should you avoid an excessively tight-fitting hood?  
A) A hood that is too tight can compress arteries in your neck, which the brain perceives as high blood pressure and then lowers your heart rate.
- 20 Q) What are two reasons for wearing dive gloves?  
A) To protect against heat loss and injuries.
- 21 Q) What are three reasons for wearing wet suit boots while diving?  
A) Warmth, protection against injuries while walking to and from the water, and for comfort when wearing adjustable-strap fins.
- 22 Q) In what six ways can you prevent overheating before a dive when wearing an exposure suit?

- A) The six ways to prevent overheating are:
1. Set up all your equipment before putting on the exposure suit and then put the suit on at the last possible moment
  2. Once you have the suit on, limit your activity as much as possible
  3. Stay out of the sun as much as possible
  4. keep your hood off, or at least pulled back off your head as long as possible
  5. Leave your jacket unzipped as long as possible
  6. Cool off by entering the water, or spraying down with a hose
- 23 Q) What are two types of weight systems?  
A) The wight belt and the integrated weight system.
- 24 Q) What's the most important feature of any weight system?  
A) The quick release feature.
- 25 Q) How do you determine how much weight you need for a dive?  
A) With your regulator in, your BCD deflated, and holding a normal breath you should have enough weight to float at eye level. When you exhale you should slowly descend. Then add 5 pounds to offset the air you will loose from your cylinder.
- 26 Q) What's an alternate air source?  
A) Any second stage you may use, other than your own primary second stage, to ascend while breathing normally.
- 27 Q) What two types of alternate air source require the help and cooperation of another diver?  
A) Alternate air second stage and the alternate inflator regulator.
- 28 Q) What type of alternate air source does not require the help and cooperation of another diver?  
A) The pony bottle or ascent bottle.
- 29 Q) Why it is important to specially mark an extra second stage used as an alternate air source?  
A) Marking it clearly makes it easy to identify quickly and without confusion in an emergency.
- 30 Q) How and where should you attach your alternate air source?  
A) Secure the alternate to your chest in the triangle formed by your chin and the lower corners of your rib cage.
- 31 Q) Why do you need a low pressure inflator?  
A) To quickly and easily inflate your BCD.
- 32 Q) Why do you need a dive knife or dive tool?  
A) For safety and convenience. You can use it to cut, pry, saw, and pound.

- 33 Q) What three features should you consider when selecting a dive knife or dive tool?
- A) The three features you should consider are:
1. Be made from stainless steel or titanium
  2. Have both a sharp cutting edge and a serrated sawing edge
  3. Come with a sheath or holder
- 34 Q) Why should you need an equipment bag?
- A) To get your dive equipment to the dive site and keep your equipment together.
- 35 Q) How do you pack an equipment bag before a dive?
- A) Pack your equipment in the reverse order in which you'll need it.
- 36 Q) What five types of reference information can you get from dive instruments?
- A) The five types of reference information are:
1. Time
  2. Depth
  3. Direction
  4. Temperature
  5. Air supply remaining
- 37 Q) What are two types of underwater timepieces used for diving?
- A) A water resistant watch and a bottom timer.
- 38 Q) Why do you need a depth gauge?
- A) You will have time limits based on your depth.
- 39 Q) What is the purpose of a dive computer?
- A) The dive computer combines your depth gauge, timer, and sometimes your SPG into a single instrument. The dive computer applies depth and time information to a decompression model to keep track of nitrogen that dissolves into your body during a dive to tell you the time you have remaining.
- 40 Q) What are three reasons that you need an underwater compass?
- A) A compass helps you know where you are in where you're going.
- 41 Q) What are two ways of gaining the attention of another diver underwater?
- A) Tap your buddy's shoulder or rap on your cylinder.
- 42 Q) What are two ways of communicating with another diver underwater?
- A) By writing on a slate or using hand signals.

43 Q) What are the 25 standard hand signals (visually) and what does each mean?

A) The 25 standard signals are:

1. Stop, hold it stay there
2. Something is wrong
3. Ok? Ok
4. Ok? Ok (Glove on)
5. Distress, help
6. Ok? Ok (On surface at distance)
7. Ok? Ok (One hand occupied)
8. Danger
9. Go up, going up
10. Go down, going down
11. Low on air
12. Out of air
13. Buddy breathe or share air
14. Come here
15. Me, or watch me
16. Under, over, or around
17. Level off, this depth
18. Go that way
19. Which direction?
20. Ears not clearing
21. I am cold
22. Take it easy, slow down
23. Hold hands
24. Get with your buddy
25. You lead, I'll follow

44 Q) What should you do if you get an underwater recall?

A) Cautiously surface and look to the boat for instructions. Don't swim toward the boat until the captain signals that it's okay to do so.

45 Q) What nine considerations should you discuss with your buddy when planning a dive?

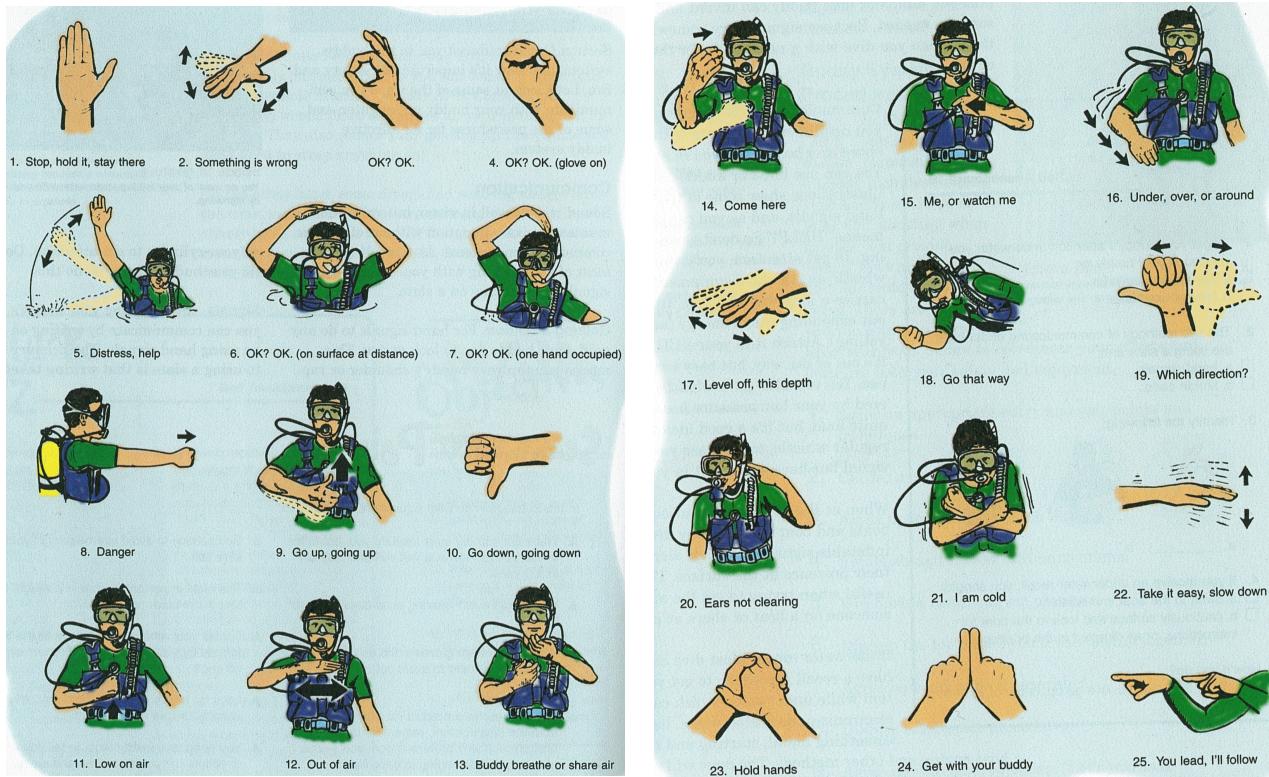


Figure 1: Hand signals.

A) The nine considerations to discuss with your buddy when planning a dive are:

1. Agree on appropriate entry and exit points and techniques
2. Choose a course to follow
3. Agree upon time and depth limits
4. Establish and review communications
5. Establish a returning air pressure
6. Discuss the technique you'll use to stay together
7. Agree on what to do if separated
8. Discuss emergency procedures
9. Agree on your dive objective

46 Q) What are the steps of the Pre-dive Safety Check?

A) Use the phrase **BEGIN WITH REVIEW AND FRIEND** to help you remember the checks.

1. **B – BCD** – Check adjustment, operation, low pressure inflator connection, and that the cylinder is firm in the band
2. **W – Weights** – Check for proper weighting, and that the quick release system is clear for ditching. Weight belts should have a right hand release
3. **R – Releases** – Make sure you're familiar with your buddy's releases and how they work. Check each other to make sure they're secure
4. **A – Air** – Confirm that you both have ample air for the dive, that your valves are open, that regulators and alternate air sources work, and that you know where to find and how to use each other's alternate air sources
5. **F – Final Okay** – Give each other a final inspection looking for out of place equipment, dangling gauges, missing gear, etc

47 Q) If you lose contact with your buddy underwater, what should you do?

A) Search for each other for not more than one minute, then surface and get back together.

## Unit III

- 1 Q) What six general environmental conditions can affect you in any aquatic environment?
  - A) The six general environmental conditions that can affect you are:
    1. Temperature
    2. Visibility
    3. Water movement
    4. Bottom composition
    5. Aquatic life
    6. Sunlight
- 2 Q) How can you obtain an orientation to an unfamiliar aquatic environment?
  - A) The PADI Discover Local Diving experience is one way. Another is to dive under the supervision of an experienced local diver.
- 3 Q) How can you expect temperature to change with depth?
  - A) It usually gets colder with depth.
- 4 Q) What's a thermocline?
  - A) A boundary between two distinct layers of water with different temperatures.
- 5 Q) How should you plan to dive in an area known to have a thermocline?
  - A) Plan the dive for the colder water. Ask a local for information about potential thermoclines and if you encounter one unexpectedly consider staying shallower in the warm water.
- 6 Q) What's the definition of "underwater visibility"?
  - A) It is based on how far you can see horizontally.
- 7 Q) What four principle factors affect underwater visibility?
  - A) The factors affecting underwater visibility are:
    1. Water movement
    2. Weather
    3. Suspended particles
    4. Bottom composition
- 8 Q) Restricted visibility can affect you in what three ways?
  - A) Restricted visibility can affect you in the following ways:
    - It's more difficult to stay with your buddy
    - It's harder to keep track of where you are and where you're going
    - You may feel disoriented when you can't see the surface or bottom for reference

- 9 Q) How do you avoid the problems associated with diving in clear water?  
A) Watch your depth gauge and stay within your planned depth limit. A reference point to look at will help prevent disorientation.
- 10 Q) What four primary causes generate surface and underwater currents?  
A) The four primary causes of currents are:
  1. Winds blowing over the surface
  2. Unequal heating and cooling of water
  3. Tides
  4. Waves
- 11 Q) What should you do if you get caught in a current and carried downstream past a predetermined destination or exit point?  
A) Swim across the current where you may be able to reach a line trailed from the boat or reach shore.
- 12 Q) In most circumstances, which way should you go when there's a mild current present?  
A) Begin your dive by slowly swimming into the current. Swim against currents on the bottom where they are usually less strong.
- 13 Q) What should you do if you get exhausted and caught in a current at the surface while diving from a boat?  
A) Don't fight it. Fill your BCD to establish buoyancy, signal for help, rest and wait for the boat to pick you up.
- 14 Q) Aquatic bottom compositions include what six types?  
A) The aquatic bottom compositions are:
  1. Silt
  2. Mud
  3. Sand
  4. Rock
  5. Coral
  6. Vegetation
- 15 Q) What are the two ways to avoid bottom contact?  
A) Use effective buoyancy control, secure equipment, and stay well off the bottom. Swim with your fins up to avoid stirring the sediment and reducing visibility.
- 16 Q) What are the two basic classifications for interaction between divers and aquatic life?  
A) Passive and active.
- 17 Q) What causes nearly all injuries from aquatic life?  
A) Defensive actions take by the animal.

- 18 Q) What should you do if you sight an aggressive animal underwater?  
A) Remain still and calm on the bottom, watch the animal, but don't swim towards it. Swim away if it remains in the area.
- 19 Q) Nine simple precautions minimize the likelihood of being injured by an aquatic animal. What are they?  
A) The precautions that minimize the likelihood of injury are:
1. Treat all animals with respect
  2. Be cautious in extremely murky water where you may have trouble watching where you put your hands
  3. Avoid wearing shiny dangling jewelry
  4. If you spearfish, remove speared fish from the water immediately
  5. Wear gloves and an exposure suit to avoid stings and cuts
  6. Maintain neutral buoyancy and stay off the bottom
  7. Move slowly and carefully
  8. Watch where you're going and where you put your hands, feet, and knees
  9. Avoid contact with unfamiliar animals
- 20 Q) Why should divers follow local fish and game laws?  
A) The laws exist to assure a continuing supply of these animals for the future.
- 21 Q) How can you prevent sunburn while out of the water (three ways), and what two ways can you use to prevent it while snorkeling?  
A) You can prevent sunburn by the following. Out of the water:
  1. Wear protective clothing
  2. Stay in the shade as much as possible
  3. Use sunscreenWhile snorkeling:
  1. Wear an exposure suit
  2. Wear waterproof sunscreen
- 22 Q) What are the general considerations for diving in freshwater, and in saltwater?

**A) Freshwater**

- Currents
- Bottom compositions
- Limited visibility
- Thermoclines
- Cold water
- Entanglement
- Deep water
- Boats
- High altitude

Saltwater:

- The same as freshwater
- Waves
- Surf
- Tides
- Currents
- Coral
- Marine life
- Remote locations

23 Q) What creates surge and how do you avoid it?

A) Waves passing overhead cause surge. Planning a deeper dive can help you avoid surge.

24 Q) What causes long shore currents, and how may they affect you?

A) Waves hitting the shore at an angle. They may push you down the shore, so start your dive into the current so you can drift back to the exit at the end of dive.

25 Q) Why would a wave break offshore?

A) An offshore reef wreck or sand bar can create a shallow area that causes waves to break.

26 Q) What causes a rip current, and how do you know when there's one present?

A) A rip current occurs when waves push water over a long obstruction such as a sand bar or reef. The water can't flow out on the bottom, so it funnels back to sea through a narrow opening.

27 Q) What should you do if you get caught in a rip current?

A) Establish buoyancy and swim parallel to the shore to clear the rip area.

28 Q) What causes an upwelling, and how might it affect local offshore dive conditions?

A) An upwelling is a slow-moving current commonly caused by offshore winds pushing the surface water away from shore. It moves water up from bottom which can make water clear and colder.

- 29 Q) Tidal movement changes what three environmental conditions?  
A) Currents, depth, and visibility.
- 30 Q) What's generally the best tidal level for diving?  
A) High tide.
- 31 Q) You need to plan your dive for what three reasons?  
A) The three reasons to plan a dive are:
  1. Avoids misunderstandings with your buddy
  2. Avoids forgotten equipment
  3. Avoids poor dive conditions
- 32 Q) What are the four stages of proper dive planning?  
A) The four stages of dive planning are:
  1. Advance planning
  2. Preparation
  3. Last-minute preparation
  4. Pre-dive planning
- 33 Q) What five general steps do you follow during the advanced planning stage of dive planning?  
A) The five general steps of the advanced diving stage are:
  1. Get a buddy
  2. Establish a dive objective
  3. Choose a dive site
  4. Determine best time to dive
  5. Discuss logistics (when/where to meet)
- 34 Q) What four general steps do you follow during the preparation stage of dive planning?  
A) The four steps of the preparation stage are:
  1. Inspect equipment
  2. Fill tank
  3. Gather equipment
  4. Use equipment checklist to be sure you have everything
- 35 Q) What five steps do you follow during the last-minute preparation stage of dive planning?

A) The five steps of the last-minute preparation stage are:

1. Check the weather
2. Let someone who isn't going with you know about your planned dive
3. Gather those last-minute type items like a jacket, hat, et cetera
4. If you haven't yet, pack your gear bag
5. Make an "idiot check" so that you don't leave anything behind

36 Q) What seven steps do you follow during the pre-dive planning stage of dive planning?

A) The seven pre-dive steps are:

1. Evaluate the conditions
2. Decide whether or not conditions favor the dive and your objective
3. Agree on where to enter, the general course to follow, the techniques to use on the dive and where to exit
4. Review hand signals and other communications
5. Decide what to do if you become separated
6. Agree on time, depth, and air supply limits
7. Discuss what to do if an emergency arise

37 Q) What are three benefits of diving from a boat?

A) The three benefits of boat diving are:

1. It eliminates long, tiresome surface swims
2. Dealing with surf
3. It eliminates long hikes to and from the water

38 Q) When preparing for a boat dive, what five general considerations apply to equipment preparation?

A) Equipment preparation for a boat dive includes:

1. Inspect your equipment for potential problems, fill you tank and pack spare parts
2. Be sure you've marked your stuff so it doesn't get confused with someone else's
3. Use a dive bag for carrying your equipment to and from the boat
4. Pack your equipment so what you need first ends up on top
5. Take ample warm/dry clothing

39 Q) Before a boat dive, what four general considerations for personal preparation apply?

A) You should:

1. Be well rested
2. Avoid excessive alcohol the night before
3. Avoid foods you don't digest well
4. Be well hydrated

40 Q) What part of the boat is:

1. Bow (forward)
2. Stern (aft)
3. Starboard
4. Port
5. Leeward
6. Windward
7. Bridge
8. Head
9. Galley

A) They are:

1. Front
2. Back
3. Right
4. Left
5. Side opposite of the wind
6. Side wind is coming from
7. Cabin with the boat controls
8. Bathroom
9. Kitchen

41 Q) By what four ways can you minimize the effects of motion sickness while on a boat?

A) You can minimize motion sickness by:

- Taking seasickness medication
- Avoid greasy foods
- Stay in fresh air on the deck
- Stay in the center of boat and watch the horizon

42 Q) By what three ways can you prevent or control most dive problems that occur at the surface?

- A) Prevention methods include:
1. Staying within your limitations
  2. Relaxing
  3. Establishing and maintaining buoyancy
- 43 Q) What should you do if a diving-related problem occurs at the surface?  
A) Immediately establish buoyancy by inflating your BCD or dropping your weights. Get help when you need it, before a small problem becomes a big one.
- 44 Q) How do the appearance and actions of a diver who is under control differ from the appearance and actions of a diver who has, or is about to have, a problem involving panic?  
A) If they are under control they will mostly look like a diver without problems, they are relaxed and breathe normally, keep their equipment in place, move with controlled, deliberate movements, and respond to instructions. A panics diver loses self control and sudden, unreasoned fear and instinctive inappropriate actions replace controlled, appropriate actions.
- 45 Q) What are the four basic steps to assisting another diver?  
A) The four basic steps to assisting another diver are:
1. Establish ample buoyancy for both of you
  2. Calm the diver
  3. Help the diver reestablish breathing control
  4. If necessary, assist the diver back to the boat or shore
- 46 Q) By what three ways can you prevent or control most dive problems that may occur underwater?  
A) You can prevent or control most underwater problems by:
1. Relaxing while you dive
  2. Keeping close watch on your air supply
  3. Diving within your limitations
- 47 Q) What are four problems that may occur underwater?  
A) Problems that may occur under water include:
1. Overexertion
  2. Running out of or low on air
  3. Regulator free flow
  4. Entanglement
- 48 Q) What, in order of priority, are the five low-on-air/out-of-air emergency procedures?

A) The low-on-air/out-of-air emergency procedures are:

1. Make a normal ascent
2. Ascend using an alternate air source
3. Ascend using a controlled emergency swimming ascent
4. Buddy breathe with a single regulator
5. Make a buoyant emergency ascent

49 Q) How do you breathe from a free-flowing regulator?

A) Hold the regulator in your hand and press the mouthpiece to the outside of your lips, inserting one corner if you like. Breathe the air you need like drinking from a water fountain, letting the excess air escape.

50 Q) What should you do if you become entangled underwater?

A) Stop and work slowly and calmly to free yourself. Don't twist or turn because this may wrap the line around you.

51 Q) What are the four general procedures for dealing with an unresponsive diver in the water.

A) The general procedures for dealing with an unresponsive diver in the water are:

1. Quickly bring the diver to the surface and check for breathing
2. Establish ample positive buoyancy for you and the victim
3. Get assistance as needed in providing rescue breathing
4. Help remove the diver from the water

## Unit IV

- 1 Q) What are five uses for a surface float?  
A) The uses for a surface float are:
  1. Resting
  2. Marking a dive site
  3. Assisting another diver
  4. Carrying things
  5. Supporting a dive flag
  
- 2 Q) What do you do to avoid entanglement in a line connected to a surface float?  
A) Carry the line on a reel or line caddie.
  
- 3 Q) Why should you use a dive flag when diving?  
A) For safety to alert or traffic that you are present.
  
- 4 Q) How close should you stay to a dive flag, and how far should boats, skiers, and water craft stay away if there are no local laws governing these distances?  
A) You should stay within 50 feet and others should stay 100 feet or more away.
  
- 5 Q) What three features does a typical collecting bag have, and why would you have a collecting bag?  
A) You use a collecting bag when you need to carry several objects while diving. The features include:
  1. Made of mesh (usually nylon) so that it drains quickly
  2. A wire frame to hold the top open or closed
  3. A lock so they stay shut
  
- 6 Q) You might take an underwater light on a dive during the day for what two reasons?  
A) For illuminating and restoring color at depth as well as for looking into dark cracks and crevices.
  
- 7 Q) What are two reasons for carrying an underwater slate as a regular part of your dive gear?  
A) You can use it to communicate and for noting information like time and depth limits and making notes for your log book.
  
- 8 Q) Why should you take a spare-parts kit with you when you dive?  
A) It minimizes the probability of missing dives due to minor problems like broken fin straps.
  
- 9 Q) What do you put in a spare-parts kit?

- A) Keep in your kit:
1. Mask strap
  2. Fin strap
  3. O-rings
  4. Silicone lubricant
  5. Snorkel keeper
  6. Cement for exposure suit repairs
  7. Waterproof plastic tape
  8. Quick-release buckle
  9. Pocket knife
  10. Pliers
  11. Adjustable wrench
  12. Screwdrivers
  13. Spare sunglasses, sunscreen, motion sickness medication
- 10 Q) There are three primary reasons for keeping a log book, what are they?
- A) The primary reasons for keeping a log book are:
1. It helps you remember your dive experiences
  2. To document your history as a diver
  3. Note specific details about a dive site for future reference
- 11 Q) What three substances should you avoid using prior to diving?
- A) You should avoid:
1. Alcohol
  2. Tobacco
  3. Drugs
- 12 Q) How often is it recommended that you have a complete physical examination by a physician?
- A) Every two years.
- 13 Q) What two immunizations should divers keep up to date?
- A) Tetanus and typhoid.
- 14 Q) What can you do to maintain your dive skills or restore them after inactivity?
- A) Be an active diver to retain your skills. If you need to refresh your skills review the manual and video or take a review class.
- 15 Q) What effect does menstruation have on diving?
- A) If it doesn't keep you from other activities it won't keep you from diving.

- 16 Q) Why is it recommended that pregnant women not dive?  
A) The effects on the fetus are unknown.
- 17 Q) What two primary gases make up air?  
A) Nitrogen and oxygen.
- 18 Q) What are five possible symptoms of contaminated air?  
A) Five possible symptoms of contaminated air are:  
1. Headaches  
2. Nausea  
3. Dizziness  
4. Unconsciousness  
5. Cherry-red lips and fingernail beds
- 19 Q) What should you do for a diver suspected of breathing contaminated air?  
A) Give them fresh air and administer oxygen if available. Medical attention should be sought.
- 20 Q) How do you prevent problems with contaminated air?  
A) Buy air from a reputable air source such as professional dive stores. They should be filled only with pure, dry, filtered compressed air.
- 21 Q) How do you prevent problems with oxygen?  
A) Do not have your cylinder filled with enriched air or use a cylinder that have been filled with enriched air. Don't use enriched air unless properly trained.
- 22 Q) What are five symptoms of nitrogen narcosis?  
A) Symptoms of nitrogen narcosis are:  
1. Impaired judgment  
2. Impaired coordination  
3. A false sense of security  
4. Disregard for safety  
5. Foolish behavior
- 23 Q) What should you do if nitrogen narcosis becomes a problem?  
A) Immediately ascend to shallower depths to relieve the narcosis.
- 24 Q) How do you prevent nitrogen narcosis?  
A) Avoid deep dives.
- 25 Q) What two primary factors influence the absorption and elimination of nitrogen in a diver?  
A) How deep you dive and for how long.

- 26 Q) What condition occurs when a diver exceeds established depth and time limits, producing bubbles in the body during and following ascent?
- A) Decompression sickness.
- 27 Q) What nine secondary factors can influence the absorption and elimination of nitrogen from the body?
- A) Secondary factors influence absorption and elimination of nitrogen are:
1. Fatigue
  2. Dehydration
  3. Vigorous exercise (before, during, or after a dive)
  4. Cold
  5. Age
  6. Illness
  7. Injuries
  8. Alcohol consumption (before or after a dive)
  9. Being overweight
- 28 Q) What signs and symptoms are associated with decompression sickness?
- A) Decompression sickness signs can vary, but they may include paralysis, shock, weakness, dizziness, numbness, tingling, difficulty breathing, and varying degrees of joint and limb pain.
- 29 Q) What is meant by decompression illness versus decompression sickness?
- A) Decompression illness includes both lung overexpansion and decompression sickness. This is because treatment are identical for both and there's no need to distinguish between them when assisting a diver.
- 30 Q) What is the necessary treatment for a diver suspected of having decompression illness?
- A) Discontinue diving, seek medical attention, and consult a dive physician.
- 31 Q) What is the first aid procedure for assisting someone with decompression illness?
- A) Have the diver lie down and breathe oxygen. Contact local emergency medical care and the local diver emergency service or closest recompression chamber. Monitor the diver and prevent shock as necessary. A diver who isn't breathing will need rescue breathing and CPR if there is no pulse.
- 32 Q) How do you avoid decompression illness?
- A) Follow the established safe time and depth limits of dive tables and dive computers. Continuously breathe and never hold your breath. Use a slow safe ascent rate with a safety stop at 15 feet.
- 33 Q) What is the primary use of dive tables and dive computers?
- A) To determine your maximum allowable time at given depths.

- 34 Q) What are meant by no decompression/no-stop diving and decompression diving?  
A) You plan your dives so that you can always ascend directly to the surface without stopping, yet without significant risk of decompression sickness.
- 35 Q) What is a no decompression limit (NDL)?  
A) The maximum allowable no-stop time at a given depth.
- 36 Q) Why should you avoid the maximum limits of dive tables and dive computers?  
A) They are models that are based on theories which cannot account for differences in individuals.
- 37 Q) How does the Recreational Dive Planner distributed by PADI differ from other dive tables?  
A) It is designed for making no decompression recreational dives and is generated for a larger range of types of people (sexes and ages).
- 38 Q) Why is your body nitrogen level higher after a repetitive dive than if you made the same dive as a non-repetitive dive?  
A) Because you have residual nitrogen left in your body from the previous dive(s).
- 39 Q) What is residual nitrogen?  
A) The nitrogen left in your body after a dive.
- 40 Q) What is a repetitive dive?  
A) A dive made before you lose all the residual nitrogen from a previous dive is called a repetitive dive.
- 41 Q) What are the general rules for using the Recreational Dive Planner, and how do you apply them?

A) The general rules for using the RDP are:

1. Bottom time is the total time in minutes from the beginning of descent until the beginning of final ascent to the surface or safety stop.
2. Any dive planned to 35 feet or less should be calculated as a dive to 35 feet.
3. Use the exact or next greater depth shown for the depths of all dives.
4. Slowly ascend from all dives at a rate that does not exceed 60 feet per minute (1 foot per second).
5. Always be conservative and avoid using the maximum limits provided.
6. When planning a dive in cold water, or under strenuous conditions, plan the dive assuming the depth is 10 feet deeper than the actual depth.
7. Plan repetitive dives so each successive dive is to a shallower depth.
8. Limit all repetitive dives to 100 feet or shallower.
9. Limit your maximum depth to your training and experience level. Scuba divers are limited to 40 feet. As an Open Water Diver, limit your dives to a maximum depth of 60 feet. Divers with greater training and experience should generally limit themselves to a maximum depth of 100 feet. Divers with appropriate experience and training may dive as deep as 130 feet. Plan all dives as decompression dives.
10. Don't exceed the RDP limits, and whenever possible avoid diving to the limits of the planner. 140 appears on the planner solely for emergencies, don't dive that deep.
11. A safety stop for 3 to 5 minutes at 15 feet is recommended at the end of all dives.

42 Q) What is bottom time?

- A) The total time in minutes from the beginning of descent until the beginning of final ascent to the surface or safety stop.

43 Q) What is the maximum depth limit for all recreational diving?

- A) 130 feet.

44 Q) How do you find the NDL for any depth between 0 and 40 meters/130 feet using the Recreational Dive Planner?

- A) Enter Table 1 from the top at the maximum depth you will dive to and go down to the time in the black box.

45 Q) What is a pressure group?

- A) A pressure group is a way to represent the amount of residual nitrogen in your body after a dive.

46 Q) How do you find the pressure group for a certain dive depth and time using the Recreational Dive Planner?

- A) Use Table 1 and enter from the top with your depth and travel down to your time. The pressure group is on the left.
- 47 Q) What is a surface interval (SI)?  
A) The time on the surface between two dives.
- 48 Q) How do you find the pressure group after a surface interval using the Recreational Dive Planner?  
A) Enter Table 2 from the left with the pressure from Table 1, move to the right to find the box with the times that bracket the surface interval and follow the column down to the bottom.
- 49 Q) What is residual nitrogen time (RNT)? [Table version only.]  
A) The amount of residual nitrogen left in your body, expressed in minutes, left in your body after a dive.
- 50 Q) How do you find residual nitrogen times on Table 3 of the Recreational Dive Planner for particular depths and pressure groups? [Table version only.]  
A) Using your pressure group from Table 2, follow that column down to the row with your depth. Residual nitrogen time is the white (top) part of the entry.
- 51 Q) What is an adjusted no decompression limit?  
A) The maximum amount of time you can spend at that depth for repetitive dive.
- 52 Q) How do you find an adjusted no decompression limit on Table 3 of the Recreational Dive Planner, for particular depths and pressure groups? [Table version only.]  
A) Using your pressure group from Table 2, follow that column down to the row with your depth. The adjusted no decompression limit is the blue (bottom) part of the entry.
- 53 Q) What is a dive profile?  
A) A graphical representation of the dive.
- 54 Q) In drawing a three-dive profile, where do you label:
  1. surface intervals?
  2. pressure groups?
  3. depths?
  4. bottom times?  
A) You label them (*This needs work.*):
  1. Top middle
  2. To the left and right of the surface interval
  3. Left side
  4. Bottom

- 55 Q) What is actual bottom time (ABT)? [Table version only.]  
A) Actual bottom time is the real bottom time spent underwater during a dive (not adjusted for residual nitrogen).
- 56 Q) What is total bottom time (TBT)? [Table version only.]  
A) The total bottom time is the actual bottom time adjusted for residual nitrogen.
- 57 Q) How do you calculate the total bottom time of a repetitive dive? [Table version only.]  
A) By adding the actual bottom time to the residual nitrogen time for your last dive.
- 58 Q) How do you find the final pressure group after making multiple repetitive dives using the Recreational Dive Planner?  
A) The final pressure group after multiple repetitive dives is found by using the total bottom time and depth from your last dive and using Table 1 the same way you did with the first dive.
- 59 Q) What are the two special rules for repetitive diving?  
A) If you are planning 3 or more dives, beginning with the first dive of the day, if your ending pressure group is W or X, the minimum surface interval between all subsequent dives is 1 hour. If your ending pressure group after any dive is Y or Z, the minimum surface interval between all subsequent dives is 3 hours. Make repetitive dives to shallower depths than all previous dives.
- 60 Q) What are the minimum surface intervals that must be made when planning three or more dives when:  
1. the ending pressure group after any dive is W or X?  
2. the ending pressure group after any dive is Y or Z?  
  
A) Minimum surface intervals are:  
1. 1 hour  
2. 3 hours

## Unit V

- 1 Q) What are the recommended depth and time for a safety stop?  
A) 5 meters/15 feet and 3 minutes.
- 2 Q) What's the purpose of a safety stop?  
A) For added conservatism.
- 3 Q) What are three situations in which a safety stop is considered required?  
A) The three situations where a safety stop is required are:
  1. Your dive has been to 100 feet (30 meters) or deeper
  2. Your pressure group at the end of the dive is within 3 pressure groups of the no decompression limit on the recreational dive planner
  3. You reach any limit on the recreational dive planner or your dive computer, this would be if your computer shows zero no decompression limit time remaining at *any point* in the dive
- 4 Q) What should you do if you exceed a no decompression limit or an adjusted no decompression limit by five minutes or less when using the RDP?  
A) Do a safety stop at 15 feet (5 meters) for 8 minutes. After surfacing remain out of the water for at least 6 hours.
- 5 Q) What should you do if you exceed a no decompression limit or an adjusted no decompression limit by more than five minutes when using the RDP?  
A) Do a safety stop at 15 feet (5 meters) for 15 minutes (time permitting). After surfacing remain out of the water for at least 24 hours.
- 6 Q) How do you determine emergency decompression requirements with a dive computer?  
A) The computer will function in emergency decompression mode, which guides you through the process.
- 7 Q) Above what altitude do you need to use special dive procedures?  
A) 30 meters / 100 feet.
- 8 Q) What are the recommendations for flying in a commercial airliner after diving.  
A) Wait 12 hours after a single dive, 18 hours for multiple dives or multi-day dives.
- 9 Q) What are the procedures for planning a dive in cold water or under strenuous conditions?  
A) Add 4 meters / 10 feet to the total depth.
- 10 Q) What procedures and general recommendations apply to diving with a computer?

- A) The general recommendations for using computers are:
1. Computers are no more or less valid than dive tables
  2. Don't share your computer
  3. Follow the most conservative computer
  4. Don't turn your computer off between dives
  5. Make your deepest dive first and plan successive dives to progressively shallower depths. During a dive, start at the deepest point and work your way shallower
  6. Stay well within computer limits
  7. If your computer quits, you may need to stop diving for 12 to 24 hours
  8. Take the RDP with you when you go diving
  9. Keep thinking, dive computers can fail
- 11 Q) What are the four basic features of an underwater compass?
- A) The four basic features of an underwater compass are:
1. Lubber line (indicates direction of travel)
  2. Magnetic north line
  3. Bezel
  4. Heading references
- 12 Q) What is the proper hand and arm position when using a compass mounted on the wrist?
- A) Put the arm without the compass straight out and then grasp that arm with the arm the compass is on near the elbow?
- 13 Q) What is the proper method of holding a compass when it is mounted in an instrument console?
- A) Hold the compass squarely in front with both hands.
- 14 Q) How do you set an underwater compass to navigate a straight line from a beginning location to a predetermined destination?
- A) Point the lubber line in the direction you want to go and align your body with the lubber line. Hold it level, let the needle settle and turn the bezel so the index marks align over the compass needle.
- 15 Q) How do you set an underwater compass for a reciprocal heading?
- A) Turn the bezel so the index marks are exactly opposite their original location on the compass face. Turn yourself until the compass needle sits inside the index marks again. Swim along the lubber line keeping the needle within the marks.
- 16 Q) What is the purpose of the PADI System of diver education?
- A)

- 17 Q) What are three benefits of continuing your diver education beyond PADI Open Water Diver?
- A)
- 18 Q) What dive adventure do you want next?
- A)
- 19 Q) How do you find the minimum surface interval required to complete a series of no decompression dives using the Recreational Dive Planner?
- A) Get the required starting pressure group for the second dive from Table 3 using the dive depth and time. Go to Table 1 to find the ending pressure group for the first dive. The intersection of the two groups in Table 2 will give you your surface interval time.
- 20 Q) How do you plan a multilevel dive with the eRDPml? [The eRDPml only.]
- A)