

# **Junior Divemaster Exam**

## **Answer Key A**



**PADI®**

# **Junior Divemaster Exam A**

## **Answer Key**

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**Directions:** Select the best answer from the choices provided, or choose the statement that best completes the sentence.

NAME \_\_\_\_\_

1. When a diver inhales from a regulator, water pressure causes a \_\_\_\_\_ to flex inward, depressing a(n) \_\_\_\_\_ that releases the gas
  - diaphragm in the second stage; downstream valve
  - piston in the first stage; upstream valve
  - burst valve in the second stage; demand lever
  - DIN valve; diaphragm
2. Which of the following can cause a regulator to let water come inside the second stage causing discomfort when you breathe?
  - A faulty environmental seal
  - Missing tabs on the mouthpiece
  - A degraded o-ring on the cylinder valve
  - A long hose
3. Tides play an important role in determining when certain dive locations will experience strong currents, \_\_\_\_\_ and \_\_\_\_\_.
  - windy conditions; poor visibility
  - changing aquatic life; longshore drift
  - changing depth; changing visibility
  - waves and upwelling
4. You should administer oxygen to a diver you suspect is suffering from decompression illness
  - only if a medical doctor is present.
  - as soon as possible.
  - only if the diver has not been diving with enriched air.
  - only if you are in a completely dry area.
5. On a dive to 30 metres/100 feet, you notice your buddy is quite distracted, chasing fish and getting farther from you without noticing. You catch up with him but he's slow to understand your hand signals. It's best for you and your buddy to
  - ascend to a shallower depth.
  - stay much closer together and continue the dive at the same depth.
  - abort the dive immediately.
  - continue until you reach your maximum planned depth.
6. The effects of lung-overexpansion injuries tend to be rapid, whereas the effects of decompression sickness tends to be somewhat delayed.
  - True
  - False
7. If a diver surfaces from an uneventful dive with some blood and mucus in her mask, she is likely to have suffered a(n)
  - ear drum rupture
  - middle ear squeeze.
  - round window rupture.
  - sinus squeeze.
8. How long would an air supply that lasts 40 minutes at 20 metres/66 feet in salt water last at 40 metres/132 feet? (Assume everything but depth is the same).
  - 16 minutes
  - 24 minutes
  - 30 minutes
  - 80 minutes

- 9.** A cylinder of air containing 0.2% carbon monoxide breathed at 30 metres/99 feet will have the same effect as breathing \_\_\_\_\_ carbon monoxide on the surface?
- 0.2%  
 0.6%  
 0.8%  
 1%
- 10.** You fill an enriched air nitrox cylinder with a blend of 30% oxygen and 70% nitrogen. At an ambient (or surrounding) pressure of 1 ata, what is the partial pressure of oxygen?
- 0.15 ata  
 0.3 ata  
 0.6 ata  
 1.0 ata
- 11.** To be a responsible diver and to reduce the chance of accidental injuries from the environment and aquatic organisms, you should:
- maintain neutral buoyancy and stay off the bottom when diving.  
 only touch marine creatures that don't flee from you.  
 wear gloves at all times.  
 move quickly when entering through murky water.
- 12.** You're on a dive boat traveling out for the first dive of a multi-dive day. This will be your deepest dive and it's to an iconic spot in the area, so you're excited. You notice one of the dive group is much quieter than normal and seems withdrawn. This could be a sign of \_\_\_\_\_ and the appropriate action would be to \_\_\_\_\_.
- barotrauma; keep an eye on the diver  
 psychological stress; go over and chat with the diver  
 decompression illness; provide oxygen  
 a bad mood; keep out of the diver's way
- 13.** Divers are not a major threat to underwater ecosystems, but hundreds of bumps and kicks by careless divers cause real damage, so it's important to emphasize diving in an environmentally responsible manner.
- True  
 False
- 14.** Which of the following is not an activity of a PADI Junior Divemaster?
- Acting as a buddy with a PADI Instructor in an alternate air source sharing demonstration for student divers in an Open Water Diver course.  
 Supervising the surface swim to and from shore for student divers in an Open Water Diver course.  
 Assisting a PADI Professional set up the spare equipment needed for a class.  
 Creating and presenting an environmental talk about the local area on behalf of the dive center.
- 15.** A Junior Divemaster can enroll in the full PADI Divemaster course upon reaching \_\_\_\_\_ years old and may receive credit for \_\_\_\_\_ already completed.
- 15 / the Dive Set Up and Management skill  
 17 / all of the components  
 18 / some of the components  
 21 / the Mapping Project
- 16.** An environmental orientation is not usually part of a dive briefing.
- True  
 False

**17.** What is the primary reason for having and using diver accounting procedures?

- To find out how many more divers can fit on the boat
- To make sure every diver returns after the dive
- To check that everyone has paid
- To make sure all divers have completed the necessary paperwork

**18.** Which of the following are characteristics of a demonstration quality skill?

- Critical attributes correctly completed and quickly
- Conscious attention is given to each step; flow doesn't matter
- A skill demonstration that would not need repeating
- Slow paced, the sequence emphasized and adequately seen

**19.** Handling diving and emergency equipment, as well as helping sort paperwork, are examples of the logistical support a Junior Divemaster or Divemaster might typically provide an instructor.

- True
- False

**20.** When conducting a search for a lost object, the topography, visibility, equipment available and \_\_\_\_\_ can all affect your choice of search pattern.

- time of day
- area size
- whether you have a map available
- entry point

**Student Statement:** Any questions I answered incorrectly I've had explained to me and I understand what I missed.

Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

1. The diaphragm flexes inward, pushing the demand lever to depress the downstream valve. The downstream valve opens with the flow of air. Gas flows through the low-pressure hose from the first stage, and continues to flow as long as the diver inhales.
2. Missing tabs makes it hard to retain the regulator in the mouth, causing a momentary loss of seal that can let the water in. A tear in the mouthpiece, an exhaust that doesn't seal properly or breathing from the regulator upside down are other possible causes.
3. Tides affect diving conditions, sometimes improving them (e.g. with good visibility) and sometimes worsening them. Tides can also affect aquatic life by redistributing plankton.
4. Providing oxygen as soon as possible is a standard part of care for most diving injuries whether on land or a diving boat. Breathing oxygen may provide significant benefits to a diver suffering from decompression illness, so should not be delayed.
5. Foolish behavior, disregard for safety, poor judgment, trouble understanding hand signals are all signs and symptoms of gas narcosis. These dissipate rapidly if the divers ascended into shallower water. Continuing the dive at the same depth or going deeper could increase the problems and continue to affect safety
6. The effects of lung-overexpansion injuries tend to be rapid and dramatic, whereas decompression sickness tends to be somewhat delayed – in about half the cases it appears within an hour, but in some cases up to 36 hours after the dive.
7. When a diver suffering from a cold or allergy dives, pressure pushes in on trapped gas pockets within the sinuses. Hydrostatic pressure forces blood and fluid from surrounding tissues into the gas pockets to restore pressure balance. During ascent, the gas expands, pushing the accumulated fluids and blood into the nasal cavity.
8. Start by calculating the air supply at the surface then at depth. If your air supply lasts 40 minutes at 20m/66 feet – 3 bar/ata, it would last 120 minutes (3 times as long) at the surface. Taking the air supply down to 40 metres/132 feet – 5 bar /ata, the air supply would last one-fifth as long –  $120 \div 5 = 24$  minutes.
9. Dalton's Law states that, "The total pressure exerted by a mixture of gases is equal to the sum of the pressures of each of the different gases making up the mixture – and acting as if it alone were present and occupied the total volume." Therefore, the partial pressure of a particular gas is greater at depth. At 30 metres/99 feet the diver is at 4 bar/ata.  $4 \times 0.2 = 0.8\%$ .
10. The partial pressure of a gas is dependent on two variables: the absolute pressure and the percentage of the gas. By multiplying the percentage of oxygen with the absolute pressure you can determine the partial pressure of oxygen: 30% or  $0.3 \times 1 = 0.3$  ata.
11. You should maintain neutral buoyancy, move slowly and carefully in the water, watch where you are going and where you put your hands, feet and knees.
12. Psychological stress is caused by mental pressures. Signs and symptoms vary from individual to individual, but include behavior changes such as becoming uncharacteristically withdrawn and quiet. You may be able to assist by talking to the diver.
13. Diving in a responsible manner directly preserves the environment by reducing the affects you have on it and by encouraging other divers to reduce theirs.
14. PADI Junior Divemaster can't act in a supervisory capacity. Duties include assisting PADI professionals with set up and logistics for diving activities, demonstrating some buddy skills and dive briefings under direct supervision, giving environmental and promotional presentations within the dive center and community.
15. Junior Divemasters may enroll in a PADI Divemaster course once they meet the course prerequisites (including age and medical evaluation). The Mapping Project, Emergency Assistance Plan, and Search and Recovery Scenario may credit toward the Divemaster course.
16. It's important to include an environmental orientation as part of the briefing. Doing so helps divers to dive in an environmentally friendly manner and familiarizes those with little or no local diving experience in the local environment.
17. Incident reports indicate that in the few accidents when divers have accidentally been left behind, the likely cause isn't faulty accounting procedures, but rather failure to use one.
18. Other characteristics include the emphasis of critical attributes, completing it in a fluid manner so the steps flow from one to another, making it look easy, pointing out sequence or critical attributes, and repeating the demonstration if necessary.
19. Equipment-related logistics are often time-consuming, so your handling of them frees the instructor to work with student divers. You can help the instructor by separating forms and paperwork into groups, but only update student records under the instructor's direct supervision.
20. Besides area size, other factors to consider would be object size, bottom composition, and hazards. The goal of any search pattern is to cover the search area as quickly as possible without leaving gaps.

# **Junior Divemaster Exam**

## **Answer Key B**



**PADI®**

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## **Answer Key**

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**Directions:** Select the best answer from the choices provided, or choose the statement that best completes the sentence.

NAME \_\_\_\_\_

1. A regulator with a downstream valve means the valve \_\_\_\_\_ with the gas flow, releasing gas. If it fails, it almost always fails \_\_\_\_\_.

  - opens / open
  - closes / closed
  - opens / closed
  - closes / open
  
2. Missing tabs on the mouthpiece, breathing from the regulator upside down and \_\_\_\_\_ are all possible causes of water entering the second stage which can cause breathing discomfort.

  - lack of an environmental seal in the cylinder valve
  - a second stage exhaust that doesn't seal properly
  - a short second stage hose
  - a leaky mask
  
3. When diving where thermoclines are present, divers need to choose their \_\_\_\_\_ based on their planned depth and duration, so it might be good to mention this during dive briefings.

  - BCD
  - regulator
  - exposure protection
  - weights
  
4. You've just climbed back onto the boat after a dive, and your buddy complains of dizziness, shortness of breath and skin close to the neck area that seems to crackle when touched. What's the best course of action?

  - Give him a warm drink and reassurance.
  - Provide oxygen and lie him down.
  - Lie him down and ensure he is warm.
  - Do nothing and let him get his breath back.
  
5. The primary hazard with gas narcosis in recreational diving is that

  - a diver may be slow to recognize a problem.
  - symptoms remain even after the diver surfaces.
  - symptoms get worse as the diver ascends to shallower depths.
  - a diver could convulse under water.
  
6. It can be difficult to distinguish between decompression sickness and lung overexpansion injuries, so the first aid, emergency care and treatment for both are identical.

  - True
  - False
  
7. If a diver is shivering uncontrollably and has impaired muscle coordination, he probably has \_\_\_\_\_ and should \_\_\_\_\_.

  - heat exhaustion / slow down.
  - severe hypothermia / make a controlled emergency swimming ascent.
  - gas narcosis / ascend into shallower waters.
  - mild hypothermia / end the dive.

- 8.** Approximately \_\_\_\_\_ of air must be pumped from the surface to completely fill a 50-litre open, inflexible container at a depth of 20 metres/66 feet of sea water.
- 50 litres  
 100 litres  
 150 litres  
 The answer can't be determined from the information given.
- 9.** A cylinder of air containing 0.5% carbon monoxide breathed at 30 metres/99 feet will have the same effect as breathing \_\_\_\_\_ carbon monoxide on the surface?
- 0.5%  
 1.0%  
 2.0%  
 3.0%
- 10.** You fill an enriched air nitrox cylinder with a blend of 30% oxygen and 70% nitrogen. At an ambient (or surrounding) pressure of 1 ata, what is the partial pressure of nitrogen?
- 0.3 ata  
 0.7 ata  
 1.0 ata  
 1.4 ata
- 11.** In terms of environmental responsibility, divers should wear gloves \_\_\_\_\_ to avoid stings and cuts.
- only when appropriate  
 all the time  
 only when planning to touch aquatic organisms  
 only in murky, dark water
- 12.** The Earth is called an "ocean planet" because
- all inland freshwater flows away from the ocean.  
 water covers about 71% of its surface.  
 it is made up of many disconnected seas and oceans .  
 seawater covers about 97% of its surface.
- 13.** Good practice for dive briefings is to keep them brief, fun and realistic. Avoid over stressing hazards.
- True  
 False
- 14.** Which of the following is an allowable activity of a PADI Junior Divemaster?
- Supervising the underwater tour for student divers in an Open Water Diver course.  
 Assisting a PADI Professional set up the spare and emergency equipment needed for a class.  
 Conducting the Discover Snorkeling program.  
 Leading certified PADI Scuba Divers on their subsequent dives.
- 15.** Which of the following could be credited from the PADI Junior Divemaster course towards the PADI Divemaster course:
- Diver Rescue Assessment  
 Dive Briefing  
 Mapping Project  
 Dive Set Up and Management
- 16.** A map of the dive site is an essential part of a dive briefing.
- True  
 False

**17.** Which of the following would be a useful tool for diver accounting procedures?

- A dive light
- PADI Dive Roster slate
- Emergency oxygen
- A whistle

**18.** The four Es of the dive business are: Education, Equipment, Experiences and \_\_\_\_\_, and particularly with the last E, your function is to \_\_\_\_\_.

- Enterprise / help the dive center make money
- Empathy / supervise and look after divers
- Equality / treat everyone the same
- Environment / be a role model

**19.** It's perfectly okay to repeat a skill demonstration from another angle. This doesn't mean the skill wasn't a demonstration quality skill and the repetition can often enhance learning.

- True
- False

**20.** Which of the following search patterns would be best carried out with a compass?

- Jackstay search
- U-pattern
- Circular pattern
- Random search in a small area

**Student Statement:** Any questions I answered incorrectly I've had explained to me and I understand what I missed.

Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

- During diver inhalation, the downstream valve opens with the flow of air. Gas flows through the low-pressure hose from the first stage, and continues to flow as long as the diver inhales. When the diver stops inhaling, the valve closes and the gas stops flowing. Downstream valves have a "fail-safe" design – if it fails, it fails open providing the diver with gas.
- Anything that makes it hard to retain the regulator in the mouth, such as a missing tab or tear on the mouthpiece can cause a momentary loss of seal that can let the water in. A loose exhaust or breathing from the regulator upside down are other possible causes.
- A thermocline is the interface between a warmer, lower density, shallower layer of water and a cooler, higher density, deeper layer, and the temperature difference between the two can be abrupt.
- Shortness of breath, dizziness and skin around the neck area that crackles when touched straight after a dive may be a sign of a lung-overexpansion injury, and so oxygen should be administered as soon as possible.
- The diver may therefore fail to respond before it escalates into an emergency. Narcosis can cause deteriorated motor skills and poor judgment, but it isn't common within recreational limits. Narcosis usually subsides with shallower depth and the symptoms usually disappear immediately.
- There's no need to distinguish between them in an emergency, so we use a single term for them – DCI – when dealing with an incident in the field.
- As the body loses heat, shivering begins in order to generate body heat through muscle activity, but underwater this is a losing battle and leads to mild hypothermia. Shivering underwater signals that it's time to end the dive, before core body temperature drops further, and shivering actually stops as the body's protective responses fail.
- At 20 metres/66 feet there is 3 ata of pressure. The container is inflexible so the volume won't change. Multiply  $50 \times 3 = 150$  litres are needed.
- Dalton's Law states that, "The total pressure exerted by a mixture of gases is equal to the sum of the pressures of each of the different gases making up the mixture – and acting as if it alone were present and occupied the total volume." Therefore, the partial pressure of a particular gas is greater at depth. In this scenario, at 30 metres/99 feet the diver is at 4 ata.  $4 \text{ ata} \times 0.5 = 2.0\%$ .
- The partial pressure of a gas is dependent on two variables: the absolute pressure and the percentage of the gas. By multiplying the percentage of oxygen with the absolute pressure you can determine the partial pressure of nitrogen: 70% or  $0.7 \times 1 = 0.7$  ata.
- Avoid touching aquatic organisms and wear gloves when appropriate, but be aware that some locations prohibit or discourage gloves to dissuade divers from touching fragile organisms.
- Seawater makes up about 97% of the total 71% of water on the Earth's surface. All seas and oceans physically connect around the globe. All inland freshwater flows toward the ocean.
- Briefings are called "briefings" because they're supposed to be brief. Keep divers comfort in mind, make it fun and give realistic appraisals of possible hazards so divers can plan accordingly and avoid them.
- PADI Junior Divemaster activities include assisting PADI Professionals with set up and logistics for diving activities, demonstrating some buddy skills and dive briefings under direct supervision. Junior Divemasters are also encouraged to give environmental and promotional presentations within the dive center and community. They can't, however, act in any supervisory capacity.
- Junior Divemasters may enroll in a PADI Divemaster course at age 18. The Mapping Project, Emergency Assistance Plan, and Search and Recovery Scenario can credit toward the Divemaster course.
- A map can enhance the site description and can be completed as a rough sketch during the briefing or presented as a prepared map. However, sometimes maps don't add much to site descriptions and aren't always used.
- The primary reason for diver accounting procedures is to ensure every diver returns after the dive. Dive Roster slates and other tools to assist with these procedures are: slates, pencils, clipboard, roster list, tags, tag board.
- The four Es list the essentials someone needs to enjoy diving. With respect to the environment, your function is to be a role model and provide guidance in how to care for and interact properly with the environment.
- Within reason you can't "over-demonstrate" a skill. Learners can continue to pick up nuances from further demonstrations if they couldn't see properly first time, they observe the skill from another angle or its repeated after a few practices by the student divers.
- U patterns involve 90 degree turns and usually requires a compass, though a skilled diver can accomplish it without one. Circular and jackstay patterns require only a line to effectively complete the search.