## Answer Sheet — Instructor Dive Theory Exams

### Directions:
Upon making your answer choice, COMPLETELY fill in the space □ below the proper letter. If a mistake is made, erase your selection or place a dark X through your first answer.

### GENERAL SKILLS AND ENVIRONMENT

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### EQUIPMENT

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

I reviewed and understand the questions I have missed.

Signature __________________________________ Date ____________________________

FORM NO. 29DT (Rev. 12/00) Version 1.1 © International PADI, Inc. 2000

Instructor Development
### Answer Sheet — Instructor Dive Theory Exams

#### PHYSICS

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### PHYSIOLOGY

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### RECREATIONAL DIVE PLANNER

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I reviewed and understand the questions I have missed.

Signature __________________________________________ Date __________
Physics

1. A balloon is filled with air at an ambient temperature near freezing. What will happen if this balloon is then placed in an environment near 35°C/100°F degrees?
   a. The volume of the balloon will increase
   b. The volume of the balloon will remain unchanged
   c. The volume of the balloon will decrease
   d. The answer cannot be determined by the data provided

2. A scuba tank is filled at an ambient temperature of 10°C/50°F degrees. What will happen if this tank is then placed in an environment near 35°C/100°F degrees?
   a. The volume of the tank would decrease
   b. The pressure within the tank will decrease
   c. The volume of the tank would increase
   d. The pressure within the tank will increase

3. Supersaturation is the state when:
   a. the pressure (gas tension) of a dissolved gas in a liquid exceeds the pressure of the gas in contact with the liquid
   b. the pressure (gas tension) of a dissolved gas in a liquid equals the pressure of the gas in contact with the liquid
   c. bubbles dissolve in a liquid due to an increase in pressure
   d. None of the above

4. A 12 litre/80 cubic foot scuba tank is taken to a depth of 30mt/99 feet. If no air is breathed from it, what would the volume of the tank be upon reaching that depth?
   a. 6 litre/40 cubic feet
   b. 4 litre/26.6 cubic feet
   c. 3 litre/20 cubic feet
   d. Unchanged

5. A flexible container filled with 1.5 litres/10 cubic feet of air is released from a depth of 90mt/300 feet. Upon reaching the surface how much air would the container then hold (assuming it did not rupture)?
   a. Approximately 45 litres/300 cubic feet
   b. Approximately 30 litres/200 cubic feet
   c. Approximately 15 litres/100 cubic feet
   d. The answer cannot be determined from the data provided.
6. An inverted jar containing 0.075 litres/0.5 cubic feet of air at 20mt/66 feet is taken to 40mt/132 feet. What would its volume be?
   a. 0.045 litres/0.3 cubic feet
   b. 0.03 litres/0.2 cubic feet
   c. 0.015 litres/0.1 cubic feet
   d. The volume would remain unchanged

7. How much air must be pumped from the surface to fill a 1.5 litre/10 cubic foot container laying in 40mt/130 feet of water?
   a. approximately 1.5 litres/10 cubic feet
   b. approximately 6 litres/40 cubic feet
   c. approximately 7.5 litres/50 cubic feet
   d. The answer cannot be determined from the data given.

8. A diver consumes 4 bar/50 psi of air per minute at 10mt/33 feet. Assuming all other factors are unchanged, what will their air consumption rate be at 30mt/99 feet?
   a. 16 bar/200 psi
   b. 8 bar/100 psi
   c. 4 bar/50 psi
   d. The answer cannot be determined from the data provided.

9. What would be the partial pressure of oxygen breathed by a diver at a depth of 50mt/165 feet? (Assume the air mixture is 79% nitrogen/21% oxygen and one atmosphere is 1 ata/15 psi.)
   a. 0.6 ata/9 psi
   b. 0.8 ata/12.4 psi
   c. 1.1 ata/15 psi
   d. 1.26 ata/18.9 psi

10. A scuba tank is filled with air containing 2.0% carbon dioxide. What would the percentage of carbon dioxide in the air be if a diver breathed from the tank at a depth of 40mt/132 feet?
    a. 8%
    b. 10%
    c. 12%
    d. Unchanged
11. Breathing air from the tank described in question #10 at a depth of 50mt/165 feet would have the same effect as breathing_________ carbon dioxide at the surface.
   a. 2.0% (unchanged)
   b. 8.0%
   c. 10.0%
   d. 12.0%

12. Describe what will occur if the pressure on a given quantity of soda water is increased four fold.
   a. Gas bubbles will form
   b. More gas will dissolve into the soda water
   c. The soda water will begin to boil
   d. The soda water will become more dense

13. Which of the following statements best describes why decompression sickness involves nitrogen and not oxygen?
   a. Oxygen is used up in the metabolic processes of the body
   b. The body metabolizes nitrogen faster than it metabolizes oxygen
   c. The partial pressure of oxygen in air (21%) is too low to be a factor in decompression sickness
   d. All of the above are correct

14. When under water, determining the direction from which a sound originates is extremely difficult because:
   a. Sound travels four times faster in water than in air
   b. Sound travels four times faster in air than in water
   c. The inner ear is less sensitive when immersed
   d. Sound waves are transmitted through the skull rather than via the ear drums

15. Which of the following is a result of water having a significantly greater heat capacity than air?
   a. When viewed under water, objects are magnified by 25%
   b. A submerged diver will suffer from the effects of cold more quickly than someone on land
   c. A submerged diver will suffer from the effects of cold less quickly than someone on land
   d. The signs/symptoms of hypothermia are less obvious under water
16. Even at midday, an underwater light is often a useful device while diving because water has the capability to______ light.
   a. absorb
   b. refract
   c. speed up
   d. bend

17. When objects are viewed under water they can at times appear more distant than they actually are because of the phenomenon referred to as:
   a. Visual deception
   b. Perceptual narrowing
   c. Visual reversal
   d. Astigmatism

18. An object that is neutrally buoyant in fresh water will_________ in sea water.
   a. sink
   b. float
   c. be neutrally buoyant
   d. sink, float or be neutral depending upon how much it weighs

19. A 20kg/1500 lb object displacing 5 litres/10 cubic feet of sea water lies at a depth of 30mt/100 feet. What is the minimum amount of water that must be displaced from a lifting device to bring the object to the surface?
   a. 14.4 litres/13.4 cubic feet
   b. 15 litres/21 cubic feet
   c. 15.3 litres/23.5 cubic feet
   d. The answer cannot be determined by the data provided.

20. The gauge pressure at 60mt/200 feet of sea water is:
   a. 5.82ata/86.6 psi
   b. 6ata/89 psi
   c. 6.79ata/89.0 psi
   d. 7ata/103.7 psi
Physiology

1. Taking 3 hyperventilating breaths just before a breath-hold dive increases the diver’s capacity to hold their breath by:
   a. Increasing the efficiency of blood haemoglobin
   b. Decreasing the body’s carbon dioxide level
   c. Increasing the body’s carbon dioxide level
   d. Decreasing the body’s oxygen level

2. Excessive breathing resistance in diving due to a maladjusted or improperly maintained regulator can result in:
   a. Hypercapnia
   b. Hypocapnia
   c. Carbon monoxide poisoning
   d. High pressure oxygen toxicity

3. Which of the following components of blood is primarily responsible for the transport of oxygen?
   a. Plasma
   b. Haemoglobin
   c. White blood cells
   d. Platelets

4. In addition to breath holding, which of the following factors may cause lung overexpansion in the scuba diver?
   a. Obstructions in the airways of the lungs
   b. Diving to extreme depths
   c. Breathing pure oxygen prior to diving
   d. Using breathing mixtures such as "nitrox"

5. Upon ascent, breathing a lower partial pressure of nitrogen can result in:
   a. Decompression sickness and air embolism
   b. Pneumothorax and emphysema
   c. Decompression sickness
   d. Thoracic squeeze and carotid sinus reflex

6. Oxygen is used during the treatment of decompression sickness in order to:
   a. Hasten the elimination of carbon dioxide
   b. Reduce pain
   c. Help flush excess nitrogen from the body
   d. Clear the sinuses and Eustachian tubes
7. A diver who suffers a lung overexpansion injury would be most seriously affected by:
   a. Air embolism
   b. Pneumothorax
   c. Mediastinal Emphysema
   d. Subcutaneous Emphysema

8. Severe dizziness following a ruptured eardrum is usually caused by:
   a. Pressure in the middle ear
   b. Cold water in the middle ear
   c. Cold water on the tympanic membrane
   d. Blood in the middle ear

9. True or False. Shallow-water blackout describes a loss of consciousness due to excess hyperventilation prior to an extended breath-hold dive, and usually occurs upon descent.

10. True or False. Carotid sinus reflex describes a condition that can result in unconsciousness caused by an exposure suit that fits too tightly around the neck.

11. The best method/s to reduce breathing resistance and maximize the elimination of carbon dioxide is/are to:
   a. Breathe slowly and deeply
   b. Avoid overexertion
   c. Use high quality, well-maintained equipment
   d. All of the above are correct.

12. Other than breathing from a contaminated air source, a primary means of increasing a diver's carbon monoxide level is:
   a. Vigorous exercise prior to diving
   b. Smoking cigarettes prior to diving
   c. Skip breathing while diving
   d. All of the above are correct.

13. Signs and symptoms of advanced hypothermia include:
   a. strong rapid pulse, no perspiration, skin hot to touch
   b. weak rapid breathing, weak rapid pulse, profuse sweating, cool clammy skin, nausea
   c. no shivering, drowsiness, lack of coordination, coma
   d. shivering, numbness in fingers and toes
14. The Eustachian tubes lead to the ______ ear and enable it to equalize with the ambient pressure, but the organs responsible for the sense of balance are located in the ______ ear.
   a. outer/inner
   b. middle/outer
   c. inner/middle
   d. middle/inner

15. Divers should not equalize pressure on their ears by an extremely forceful valsalva maneuver primarily to avoid which of the following conditions?
   a. Oval window rupture
   b. Mask squeeze
   c. Round window rupture
   d. Ear squeeze

16. Signs and symptoms of a lung expansion injury usually are seen as being ______ than those of decompression sickness.
   a. quicker to occur
   b. slower to occur
   c. less severe
   d. more difficult to diagnose

17. Which of the following describe the signs and symptoms of nitrogen narcosis?
   a. Impaired judgment
   b. reduced motor coordination
   c. Euphoria
   d. All of the above are correct.

18. Factors that are thought to increase a diver's susceptibility to decompression sickness usually relate to:
   a. Altering the normal blood circulation
   b. Increasing the level of oxygen within the tissues
   c. Increasing the diver's tolerance to nitrogen
   d. All of the above are correct.

19. True or False. It is unlikely that oxygen toxicity would affect recreational divers if they remain within the limits of recreational diving (maximum 130 feet) and the percentage of oxygen in their air does not exceed 21%.

20. True or False. A Doppler Detector is used to listen for tiny "silent bubbles" which can be heard even in divers who do not develop signs and symptoms of decompression sickness.
Recreational Dive Planner

1. A dive computer provides more no decompression time than a table because:
   a. It uses a more sophisticated model than a dive table
   b. It eliminates unnecessary rounding by calculating the dive exactly
   c. it allows you to disregard table guidelines, such as following shallow dives with deep dives
   d. All of the above

2. Which is/are a recommendation/rule(s) for RDP use (check all that apply):
   a. Plan cold/strenuous dives as 10m/32ft deeper than actual
   b. Make deeper dives before shallower dives
   c. Allow at least 6 hours after diving before ascending to altitude
   d. a safety stop for 3 minutes at 5m/15ft is required any time the diver comes up to or within 3 pressure groups of a no decompression limit and for any dive to a depth of 30m/100ft or deeper.

3. The repetitive group indicator (pressure Group) is a measure of the:
   a. Depth of the previous dive
   b. Theoretical residual nitrogen in the body tissues
   c. Length of the surface interval
   d. Number of dives you have made.

4. A capillary depth gauge automatically compensates for high altitude because it operates on the basis of ______ rather than on a direct measure of the ambient pressure.
   a. Boyle’s Law
   b. Dalton’s Law
   c. tissue half-times
   d. Haldane’s Law
5. The Recreational Dive Planner is based on a ______ model (as are the U.S. Navy tables), and the ______ was/were used to construct the Surface Interval Credit Table.
   a. multi-compartment/60-minute compartment
   b. single compartment/fat tissues
   c. Haldanian/fourteen compartments
   d. Doppler/human testing

6. Which of the following factors may increase a diver’s probability of getting decompression sickness?
   a. Heavy exercise
   b. Drinking alcohol
   c. Being cold during the dive
   d. All of the above are correct

7. True or False. In comparison with the U.S. Navy tables, the Recreational Dive Planner provides shorter surface interval times because a much faster "gas washout" compartment was used.

8. True or False. In determining the no-decompression limits, flying after diving recommendations and special rule for multiple dives, the designers of the Recreational Dive Planner used the same number of tissue compartments as were used to construct the U.S. Navy tables.

9. True or False. When diving 300mt/1000 ft or higher above sea level, actual depth must be converted into equivalent sea-level depth in order to use the Recreational Dive Planner.

10. True or False. Because of the similarity in design, Repetitive Group Designations may be transferred between the Recreational Dive Planner and the U.S. Navy tables.
11. If a diver exceeds the no decompression limit for a dive by 5 minutes but didn’t realize it until after surfacing and boarding the dive boat, what procedures should the diver follow?
   a. If out of the water for less than five minutes, reenter and stop at 40 feet for one-fourth the time missed; ascend to 30 feet for one-third the time; ascend to 20 feet for one-half the time, and ascend to 10 feet for one and a half times the amount of time missed.
   b. Reenter the water only if there are no symptoms of decompression sickness and institute the above procedure.
   c. Remain on the surface, rest, be monitored for signs of decompression sickness, breathe 100% oxygen, and do not dive for at least 24 hours.
   d. Immediately seek medical attention and recompression.

12. A diver exits the water at 9:25 a.m. after a dive to 15m/50 feet for 40 minutes. What is the earliest this diver should board a commercial airliner for their flight home?
   a. 1:25 p.m.
   b. 9:25 p.m.
   c. When they enter Pressure Group D
   d. 9:25 a.m. the next day

Note: Use the Recreational Dive Planner Table for questions #13 through #16.

13. After a 25 minute dive to 25m/90 ft, a diver ascends to 5m/15 ft for a three-minute safety stop. Upon exiting the water what Pressure Group are they in?
   Metric       |   Imperial
   a. P         |   a. P
   b. N         |   b. Q
   c. R         |   c. N
   d. M         |   d. R
14. A diver exits the water at 2:35 p.m. after a dive to 22m/75 feet for 25 minutes. They re-enter the water at 3:30 p.m. for a dive to 60 feet/18 meters. What is their maximum allowable bottom time for the second dive?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 41</td>
<td>a. 16</td>
</tr>
<tr>
<td>b. 16</td>
<td>b. 30</td>
</tr>
<tr>
<td>c. 40</td>
<td>c. 38</td>
</tr>
<tr>
<td>d. 38</td>
<td>d. 53</td>
</tr>
</tbody>
</table>

15. A diver exits the water at 11:55 after a dive to 18m/60ft for 50 minutes. At 12:15 they reenter the water for a 24 minute dive to 15m/50 ft. If they wish to make a third dive after only a four-minute surface interval, what is the maximum depth to which they may dive and remain for at least 30 minutes?

| a. 40 feet/12 meters |
| b. 50 feet/15 meters |
| c. 60 feet/18 meters |
| d. The third dive cannot be made with such a short surface interval |

16. A diver is planning a series of three dives. Assume the diver uses minimum surface intervals, follows all Recreational Dive Planner rules and dives these exact profiles: Dive #1 - 18m/60 ft for 55 minutes; Dive #2 - 15m/50 ft for 40 minutes; Dive #3 - 15m/50 ft for 30 minutes. In minutes, how long will the entire dive profile take to complete—from start to finish? (You may ignore ascent time but not safety stop time.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 230</td>
<td>a. 193</td>
</tr>
<tr>
<td>b. 202</td>
<td>b. 202</td>
</tr>
<tr>
<td>c. 239</td>
<td>c. 215</td>
</tr>
<tr>
<td>d. 251</td>
<td>d. 255</td>
</tr>
</tbody>
</table>
Note: You are to use the eRDPml in completing questions #17 through #20.

17. A diver exits the water at 12:30 p.m. after a dive to 22m/73 ft for 23 minutes. They reenter the water at 1:40 p.m. for a dive to 21m/70 ft. What is their maximum allowable bottom time for the second dive?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 28 minutes</td>
<td>a. 29 minutes</td>
</tr>
<tr>
<td>b. 25 minutes</td>
<td>b. 28 minutes</td>
</tr>
<tr>
<td>c. 20 minutes</td>
<td>c. 21 minutes</td>
</tr>
<tr>
<td>d. 17 minutes</td>
<td>d. 19 minutes</td>
</tr>
</tbody>
</table>

18. During a multilevel dive, a diver spends 10 minutes at a depth of 36m/120 ft. If they then wish to ascend to 18m/60 ft, what would be the remaining No-decompression time during the shallow portion of the dive?

| a. 25 minutes |
| b. 28 minutes |
| c. 34 minutes |
| d. As the dive is outside the allowable limits for a multilevel exposure, an emergency decompression stop must be made.

19. A diver is planning a multilevel dive. They wish to stay at 30m/100 ft for 10 minutes, and then ascend to 24m/80 ft for 15 minutes. What will their Pressure Group be upon exiting the water?

| a. Group P |
| b. Group S |
| c. Group X |
| d. The dive cannot be made as planned |
20. You have just made 2 dives, the first to 29m/98ft for 12 minutes, and the second to 23m/59 ft for 20 minutes, with a 42 minute surface interval between them. What is the minimum surface interval required for a dive to 15m/54ft for 40 minutes?

Metric  Imperial  
a. 35 mins  a. 31 mins  
b. 44 mins  b. 45 mins  
c. 56 mins  c. 54 mins  
d. The answer cannot be determined from the information given.
Skills and Environment

1. According to the Recreational Dive Planner, altitude diving is defined as any dive taking place between ______ above sea level.
   a. 300-3000m/1000-10000ft
   b. 100-1000m/300-3000ft
   c. 500-3000m/1500-10000ft
   d. 1000-3000m/3000-10000ft

2. When diving at altitude, although the percentage of the gases within the atmosphere remain the same, the ______ of the gases will ______.
   a. partial pressures/increase
   b. partial pressures/decrease
   c. density/increase
   b. compressibility/decrease

3. Tides are primarily determined by:
   a. The strength and direction of the wind
   b. Oceanic currents
   c. The gravitational force of the moon
   d. Seismic activity

4. The general circulation pattern of major ocean currents is:
   a. Clockwise
   b. Counterclockwise
   c. Clockwise in the Northern Hemisphere, but counterclockwise in the Southern
   d. Clockwise in the Southern Hemisphere, but counterclockwise in the Northern

5. To perform a Controlled Emergency Swimming Ascent, a diver should:
   a. Drop their weight belt and ascend to the surface, exhaling continuously
   b. Drop their weight belt, remove their regulator from their mouth and ascend to the surface, exhaling continuously
   c. Retain their weight belt, but remove their regulator from their mouth and ascend to the surface, exhaling continuously
   d. Swim to the surface with all equipment in place, exhaling continuously by making an "ah" sound

6. A lift bag should be used for recovery of an object when it is:
   a. More than 4-7kgs/ 10-15 lbs. negatively buoyant
   b. More than 20kgs/50 lbs. negatively buoyant
   c. Determined that it displaces more than 2 cubic feet
   d. Stuck in the mud
7. When at the surface, a diver in a state of panic will usually:
   a. Signal for assistance by waving an arm
   b. Respond to an order to remove their weight belt
   c. Have their mask and mouthpiece removed while struggling on the surface
   d. All of the above are correct.

8. Ripple marks, when present, may be used as navigation aids because close to the shoreline they usually run:
   a. Parallel to the shoreline
   b. At a ninety degree angle to the shoreline
   c. Diagonally to the shore
   d. Both parallel and perpendicular to the shoreline, depending on circumstance

9. When diving in a new location and environment, all divers (including instructors) should first obtain:
   a. A local fishing license
   b. A local Environmental Orientation
   c. A regional certification
   d. Access to good dive sites

10. A properly weighted diver will float vertically at about what level if relaxed and holding a normal breath with their BCD deflated?
    a. Chin
    b. Eye
    c. Top of head
    d. Shoulder

11. A near drowning victim claims to be feeling well and wants to go home. The rescuer should:
    a. Insist that they be medically evaluated
    b. Allow them to do as they wish
    c. Allow them to do as they wish if they promise to see a doctor the next day
    d. Take the patient to a recompression chamber

12. Which of the following is NOT a typical sign/symptom of a serious marine life injury?
    a. Numbness
    b. Euphoria
    c. Local swelling and inflammation
    d. Nausea and shock
13. When administering one-rescuer CPR, the compression rate should be:
   a. As quickly as possible
   b. One compression every 5 seconds
   c. 80-100 compressions per minute
   d. 60 compressions per minutes

14. When administering one-rescuer CPR, the ratio of compressions to ventilations is:
   a. 5 compressions followed by 1 ventilation
   b. 15 compressions followed by 2 ventilations
   c. 30 compressions followed by 4 ventilations
   d. 30 compressions followed by 2 ventilations

15. When responding to an unresponsive diver at the surface, if you are more than 5 minutes from assistance, what is the most appropriate course of action?
   a. Begin CPR immediately while calling for help.
   b. Give rescue breaths for 1 minute whilst checking for signs of movement. If there are no signs of response, discontinue rescue breaths and get the diver out of the water as quickly as possible.
   c. Assume the patient has a heart beat and ventilate while towing.
   d. Administer CPR while towing the patient to shore or boat.

16. In-water recompression of a suspected decompression sickness patient should be attempted when which of the following circumstances apply?
   a. If a physician approves it
   b. If at least a 4 hour supply of oxygen is available
   c. If cold is not a factor
   d. Never

17. Other than using a calibrated device or measured line, the most accurate means of measuring distance under water is:
   a. Arm spans
   b. Kick cycles
   c. A timed swim
   d. Air consumption

18. If you are standing on a boat facing it’s stern, the side to your left is,
   a. Starboard
   b. Port
   c. leeward
   d. aft
19. Search and recovery techniques vary according to:
   a. The environmental conditions present
   b. The size of the object to be located
   c. The weight of the object to be located
   d. All of the above are correct.

20. With respect to tides, in general the ideal time to dive is:
   a. High tide
   b. slack high tide
   c. Low tide
   d. slack low tide
Equipment

1. When a scuba tank is hydrostatically tested it is:
   a. filled with sea water to check for corrosion
   b. overfilled with pressure to check for metal fatigue
   c. tumbled to remove internal corrosion
   d. heat treated

2. A scuba cylinder made of ______ will have thicker walls than one made of ______ and is more resistant to internal ______.
   a. steel, metal, corrosion
   b. steel, aluminum, contamination
   c. aluminum, steel, corrosion
   d. aluminum, metal, contamination

3. Spring-loaded constant reserve valves are called______ valves, and are set to operate at approximately______ psi/bar when using a single scuba tank.
   a. K/300-600/20-40
   b. J/300-600/20-40
   c. K/I50-300/10-20
   d. J/150-30010-20

4. On a downstream valve, the high-pressure air entering the orifice tends to ______ the valve.
   a. close
   b. open
   c. balance
   d. open or close

5. The second stage of a regulator, due to its downstream design, will tend to ______ in the event of a mechanical failure.
   a. free-flow
   b. stop delivering air
   c. be hard to breath from
   d. go unnoticed

6. A balanced regulator will tend to provide a______ breathing effort______ the dive.
   a. comfortable/only at the beginning of
   b. increased/midway through
   c. consistent/only at the end
   d. consistent/throughout
7. The Burst Disc in a tank valve is directly activated by:
   a. Heat
   b. Heat or pressure
   c. Pressure
   d. Tank expansion

8. When the exterior of a scuba tank is painted or refinished, special care should be taken to avoid any procedures using:
   a. Heat
   b. Zinc-based pigments
   c. Flammable solvents
   d. All of the above are correct

9. When is it reasonable and prudent to hydrostatically test a scuba cylinder?
   a. monthly
   b. when tumbled or damaged due to impact
   c. after 100 fills
   d. when changing valves

10. One way to prevent damage due to galvanic action between the threads of the valve and tank neck is to:
    a. Have the tank visually inspected and change the O-ring annually
    b. Use a wrench to firmly tighten the valve
    c. Use Teflon tape to ensure a positive seal between the valve and the tank
    d. All of the above are correct

11. The "open-circuit" design feature of a scuba regulator refers to the fact that:
    a. Upon exhalation the air is continually recycled back through the system
    b. Upon inhalation the air is released into the water rather than being recycled back through the system
    c. Upon inhalation all downstream valves within the system open
    d. Upon exhalation the air is released into the water rather than being recycled back through the system

12. The "demand" design feature of a scuba regulator refers to the fact that:
    a. Air is provided to the diver only upon inhalation
    b. Air is continuously provided to the diver even during exhalation
    c. Air is provided to the diver only when the tank valve is opened
    d. Air flow can be discontinued at the diver's discretion
13. The function of the first stage of a scuba regulator is to reduce the tank pressure to a(n) ______ pressure.
   a. ambient
   b. intermediate
   c. atmospheric
   d. comfortable

14. The function of the second stage of a scuba regulator is to reduce the tank pressure to a(n) ______ pressure.
   a. ambient
   b. intermediate
   c. atmospheric
   d. comfortable

15. The second stage of a scuba regulator is normally activated by the diver’s ______ effort, causing a(n) ______ to depress a demand lever and open a valve.
   a. exhalation/diaphragm
   b. inhalation/reduction in the tank pressure
   c. exhalation/increase in tank pressure
   d. inhalation/diaphragm

16. Without special modification to the first stage, scuba regulators can ______ when used in extremely cold water.
   a. form ice within the first stage causing a free-flow
   b. breathe extremely hard
   c. cause severe fatigue to the diver
   d. cause the diver to aspirate ice crystals

17. When using a dive computer to monitor a dive profile:
   a. Each member of the buddy team should have their own computer
   b. The most conservative device should be used to calculate the depth/time of the dive
   c. Both A & B are correct
   d. None of the above are correct

18. Capillary depth gauges are based on ______ rather than actual ______.
   a. pressure-volume relationships/ ambient pressure readings
   b. ambient pressure readings/pressure-volume relationships
   c. Dalton’s Law/linear distance to the surface
   d. Henry’s Law/linear distance to the surface
19. Because of their unique design concept, capillary depth gauges are often used in:
   a. Deep diving
   b. Wreck diving
   c. High altitude diving
   d. All of the above are correct

20. A scuba regulator is referred to as having a ______ design because of its tendency to ______ in the event of a malfunction.
   a. fail-safe/continue to function normally
   b. maintenance-free/free-flow
   c. demand valve/warn the diver
   d. fail-safe/free-flow