

ENRICHED AIR NITROX

Final Exam | A | English-Imperial

Instructions: Select the best answer from the choices below.
Mark your answer on an SSI 50-Question Answer Form.

- 1. Which special in-water skills are required to dive with nitrox?**
 - A. Perfect Buoyancy
 - B. None
 - C. Ability to carry up to 2 cylinders
 - D. Buddy breathing
- 2. How does planning nitrox dives differ from planning air dives?**
 - A. You must also manage your exposure to nitrogen
 - B. You have to dive deeper
 - C. You have to plan longer surface intervals
 - D. You must also manage your exposure to oxygen
- 3. A common misconception is that, when compared to air, nitrox enables divers to dive:**
 - A. shallower
 - B. longer
 - C. shorter
 - D. deeper
- 4. The risk of CNS Oxygen Toxicity becomes more substantial above?:**
 - A. A ppO_2 of 1.6 ata
 - B. A ppO_2 of 1.4 ata
 - C. 1000 feet of altitude
 - D. A dive time of 30 minutes with air at 66 feet
- 5. The single most important aspect of managing your exposure to oxygen is controlling the intensity of that exposure by determining:**
 - A. A Maximum Operating Depth (MOD), based on a limiting ppO_2 of 1.6 ata or more.
 - B. A Maximum Operating Depth (MOD), based on a limiting ppO_2 of 1.4 ata or less.
 - C. The depth of the last dive
 - D. A Maximum Operating Depth (MOD), based on a limiting Fraction of Oxygen (FO_2) of 32 or more.
- 6. Which kind of warnings should you observe and adhere to while diving with a dive computer?**
 - A. Ascent rates
 - B. Decompression limits
 - C. Oxygen/nitrogen exposure
 - D. All answers are correct
- 7. According to the SSI CNS Clock Table you have two different CNS clock limits, one for a single dive, and one for a 24-hour period. For a ppO_2 of 1.4 ata, these limits are:**
 - A. 150 mins single dive / 180 mins 24 hrs
 - B. 180 mins single dive/ 120 mins 24 hrs
 - C. 180 mins single dive / 210 mins 24 hrs
 - D. 120 mins single dive/ 180 mins 24 hrs
- 8. If you experience a computer failure underwater, you should:**
 - A. Signal your buddy and ascend with them while they monitor your ascent on their computer
 - B. All answers are correct
 - C. Perform a longer than normal safety stop if air supply permits as an added precaution
 - D. Do not enter the water again for at least 24 hours and watch for signs of Decompression Sickness (DCS)
- 9. What does ppO_2 mean?**
 - A. Partial pressure of nitrogen
 - B. Air
 - C. Partial pressure of oxygen
 - D. Nitrox
- 10. How can the ppO_2 of a breathing gas be calculated?**
 - A. Multiply ambient pressure by the fraction of oxygen (FO_2) found in the breathing gas.
 - B. Multiply air pressure by the fraction of oxygen (FO_2) found in the breathing gas.
 - C. Multiply cylinder pressure by the fraction of nitrogen (FN_2) in the cylinder
 - D. Divide ambient pressure by the fraction of oxygen (FO_2) found in the breathing gas
- 11. Which special skills are required before you dive with nitrox?**
 - A. None
 - B. Correct analysis of cylinder contents in the field and at the blending station
 - C. Ability to carry up to 2 cylinders
 - D. Buddy breathing

- 12. The best, safest and most comfortable way to track your oxygen and nitrogen exposure is:**
- Use an air-programmable dive computer
 - Use a nitrox-programmable dive computer
 - Use an air table or air computer
 - Use an air table with a oxygen clean pressure gauge
- 13. The potential benefits of using the same dive tables or dive computers as for diving on air are:**
- All answers are correct
 - You reduce your risk of DCS by basing your dive plans on the assumption your breathing mixture contains more nitrogen than it actually does.
 - You greatly simplify the dive planning process by using the same tools as you do when diving air.
 - You ensure a greater safety margin
- 14. You can be sure that the FO₂ content on the cylinder contents tag accurately reflects the cylinder contents if:**
- It was analyzed by a recognized dive center
 - You personally analyze the cylinder's FO₂ content, or witness the analysis
 - The date on the content tag is not older than 1 day
 - It was done by your buddy
- 15. Oxygen can be toxic to all body tissues. Its most noticeable and immediate effects take place in the:**
- Lungs and circulation system
 - Central nervous system and feet
 - Bones and blood
 - Lungs and central nervous system
- 16. The major benefit of diving with nitrox is that it has a lower concentration of _____, which limits our time at depth.**
- Oxygen
 - Nitrogen
 - Air
 - Nitrox
- 17. The recommended limiting ppO₂ and maximum limiting ppO₂ for recreational nitrox dives are:**
- 0.21/0.79
 - 0.21/0.16
 - 1.4/1.6
 - 1.3/1.6
- 18. Nitrox and the acronym EANx refer to mixtures with oxygen concentrations (FO₂) higher than:**
- 32%
 - 36%
 - 40%
 - 21%
- 19. O₂ cleaned and O₂ service rated cylinders will maintain their rating if they are only filled with:**
- Air
 - Oxygen-compatible gas
 - Any breathing gas
 - Nitrogen
- 20. If scuba equipment, valves and cylinders are exposed to pure oxygen, they have to be:**
- Nitrox rated
 - Air rated
 - Stored in dry places
 - O₂ clean and O₂ service rated
- 21. On each dive you determine the percentage of the CNS "clock" limit that you received. When making multiple dives you have to:**
- Subtract the percentages of each dive within a 24-hour period from each other.
 - Multiply the percentages within a 24-hour period.
 - Add the percentages together and avoid exceeding 100%.
 - Divide the percentages of your previous dive day from the actual dive limits.
- 22. Two factors determine your total oxygen "dose." These factors are:**
- The ppO₂ at depth AND the fraction of oxygen in your cylinder
 - The ppO₂ at depth AND the length of the exposure
 - The length of the exposure and the depth of your last dives
 - The ppN₂ at depth AND the length of the exposure
- 23. What is the primary sign of CNS Oxygen Toxicity that can cause the loss of the second stage and drowning?**
- Itchiness of the skin
 - Visual impairment
 - Convulsions
 - Joint pain
- 24. You can improve your safety while diving with nitrox by:**
- using nitrox computers set to nitrox
 - Using the same depth and time limitations as an air table or air computer
 - using helium computers
 - using nitrox tables
- 25. The two most commonly used nitrox mixtures in recreational diving are:**
- EAN21/EAN79
 - EAN50/EAN60
 - EAN80/EAN20
 - EAN32/EAN36

ENRICHED AIR NITROX

Final Exam | B | English-Imperial

Instructions: Select the best answer from the choices below.
Mark your answer on an SSI 50-Question Answer Form.

- 1. What does ppO_2 mean?**
 - A. Partial pressure of nitrogen
 - B. Partial pressure of oxygen
 - C. Air
 - D. Nitrox
- 2. What is the primary sign of CNS Oxygen Toxicity that can cause the loss of the second stage and drowning?**
 - A. Itchiness of the skin
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- 3. You can be sure that the FO_2 content on the cylinder contents tag accurately reflects the cylinder contents if:**
 - A. It was analyzed by a recognized dive center
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- 4. Which special skills are required before you dive with nitrox?**
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- 5. Oxygen can be toxic to all body tissues. Its most noticeable and immediate effects take place in the:**
 - A. Lungs and circulation system
 - B. Lungs and central nervous system
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- 6. O_2 cleaned and O_2 service rated cylinders will maintain their rating if they are only filled with:**
 - A. Air
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 - D. Oxygen-compatible gas
- 7. If scuba equipment, valves and cylinders are exposed to pure oxygen, they have to be:**
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 - B. Nitrox rated
 - C. Air rated
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- 8. You can improve your safety while diving with nitrox by:**
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 - A. Signal your buddy and ascend with them while they monitor your ascent on their computer
 - B. Perform a longer than normal safety stop if air supply permits as an added precaution
 - C. All answers are correct
 - D. Do not enter the water again for at least 24 hours and watch for signs of Decompression Sickness (DCS)
- 10. The best, safest and most comfortable way to track your oxygen and nitrogen exposure is:**
 - A. Use a nitrox-programmable dive computer
 - B. Use an air-programmable dive computer
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 - The length of the exposure and the depth of your last dives
 - The ppN_2 at depth AND the length of the exposure
- 14. The major benefit of diving with nitrox is that it has a lower concentration of _____, which limits our time at depth.**
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- 18. Nitrox and the acronym EANx refer to mixtures with oxygen concentrations (FO_2) higher than:**
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 - Multiply cylinder pressure by the fraction of nitrogen (FN_2) in the cylinder
 - Divide ambient pressure by the fraction of oxygen (FO_2) found in the breathing gas
- 20. How does planning nitrox dives differ from planning air dives?**
- You must also manage your exposure to nitrogen
 - You have to dive deeper
 - You have to plan longer surface intervals
 - You must also manage your exposure to oxygen
- 21. The two most commonly used nitrox mixtures in recreational diving are:**
- EAN21/EAN79
 - EAN50/EAN60
 - EAN32/EAN36
 - EAN80/EAN20
- 22. According to the SSI CNS Clock Table you have two different CNS clock limits, one for a single dive, and one for a 24-hour period. For a ppO_2 of 1.4 ata, these limits are:**
- 180 mins single dive/ 120 mins 24 hrs
 - 150 mins single dive / 180 mins 24 hrs
 - 180 mins single dive / 210 mins 24 hrs
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- 23. Which kind of warnings should you observe and adhere to while diving with a dive computer?**
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- 24. Which special in-water skills are required to dive with nitrox?**
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 - Ability to carry up to 2 cylinders
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- 25. On each dive you determine the percentage of the CNS "clock" limit that you received. When making multiple dives you have to:**
- Subtract the percentages of each dive within a 24-hour period from each other.
 - Multiply the percentages within a 24-hour period.
 - Divide the percentages of your previous dive day from the actual dive limits.
 - Add the percentages together and avoid exceeding 100%.

COMBINED AIR/EANx DIVE TABLES

DOPPLER NO-DECOMPRESSION LIMITS BASED ON U.S. NAVY DIVE TABLES



TABLE 1 No-Decompression Limits and Repetitive Group Designation Table For No-Decompression Dives

DEPTH IN FEET			Doppler limits (minutes)	HOW TO USE TABLE 1: Find the planned depth of your dive in feet at the far left of Table 1. Read to the right until you find the time (minutes) you plan to spend at that depth. Read down to find the Group Designation letter.											
AIR PO ₂	EAN32 PO ₂	EAN36 PO ₂		60	120	210	300	225	350	240	325	245	205	140	160
10 0.27	16 0.48	20 0.38		60	120	210	300								
15 0.31	22 0.54	26 0.65		35	70	110	160								
20 0.34	28 0.60	32 0.71		25	50	75	100	135	180	240	325				
25 0.37	34 0.65	38 0.78	245	20	35	55	75	100	125	160	195	245			
30 0.40	40 0.71	44 0.85	205	15	30	45	60	75	95	120	145	170	205		
35 0.43	46 0.77	50 0.92	160	5	15	25	40	50	60	80	100	120	140	160	
40 0.47	51 0.82	57 0.98	130	5	15	25	30	40	50	70	80	100	110	130	
50 0.53	63 0.94	69 1.12	70		10	15	25	30	40	50	60	70			
60 0.59	75 1.05	81 1.25	50		10	15	20	25	30	40	50				
70 0.66	86 1.16	94 1.39	40		5	10	15	20	30	35	40				
80 0.72	98 1.27	106 1.52	30		5	10	15	20	25	30					
90 0.78	109 1.39		25		5	10	12	15	20	25					
100 0.85	121 1.50		20		5	7	10	15	20						
110 0.91	130 1.58		15		5	10	13	15							
120 0.97			10		5	10									
130 1.04			5		5										

GROUP DESIGNATION: **A B C D E F G H I J K**

HOW TO USE TABLE 2:

Enter with the Group Designation letter from Table 1. Follow the arrow down to the corresponding letter on Table 2. To the left of these letters are windows of time. Read to the left until you find the times between which your surface interval falls. Then read down until you find your New Group Designation letter. Dives following surface intervals of more than 12 hours are not repetitive dives.

TABLE 2		Residual Nitrogen Timetable For Repetitive Dives											
0:10 12:00*	A												
3:21 12:00*	0:10 3:20	B											
4:50 12:00*	1:40 4:49	0:10 1:39	C										
5:49 12:00*	2:39 5:48	1:10 2:38	0:10 1:09	D									
6:35 12:00*	3:25 6:34	1:58 3:24	0:55 1:57	0:10 0:54	E								
7:06 12:00*	3:58 7:05	2:29 3:57	1:30 2:28	0:46 1:29	0:10 0:45	F							
7:36 12:00*	4:26 7:35	2:59 4:25	2:00 2:58	1:16 1:59	0:41 1:15	0:10 0:40	G						
8:00 12:00*	4:50 7:59	3:21 4:49	2:24 3:20	1:42 2:23	1:07 1:41	0:37 1:06	0:10 0:36	H					
8:22 12:00*	5:13 8:21	3:44 5:12	2:45 3:43	2:03 2:44	1:30 2:02	1:00 1:29	0:34 0:59	0:10 0:33	I				
8:51 12:00*	5:41 8:50	4:03 5:40	3:05 4:02	2:21 3:04	1:48 2:20	1:20 1:47	0:55 1:19	0:32 0:54	0:10 0:31	J			
8:59 12:00*	5:49 8:58	4:20 5:48	3:22 4:19	2:39 3:21	2:04 2:38	1:36 2:03	1:12 1:35	0:50 1:11	0:29 0:49	0:10 0:28	K		

NEW GROUP DESIGNATION	A B C D E F G H I J K
REPETITIVE DIVE DEPTH	▼ RESIDUAL NITROGEN TIMES DISPLAYED ON REVERSE ▼

Equivalent Air
Dive Table
Depth Values
(Metres)
(PO₂)

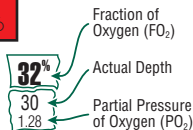
EQUIVALENT DEPTHS IN METRES

BASED ON FRACTION OF OXYGEN

SSI
SCUBA SCHOOLS
INTERNATIONAL

	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
10 0.42	10 0.44	11 0.48	11 0.50	11 0.53	11 0.55	12 0.59	12 0.62	12 0.64	13 0.69	13 0.71	13 0.74	14 0.79	14 0.82	14 0.84	15 0.90	16 0.96	16 0.99	17 1.05	17 1.08
12 0.46	12 0.48	13 0.53	13 0.55	13 0.58	13 0.60	14 0.65	14 0.67	14 0.70	15 0.75	15 0.78	16 0.83	16 0.86	16 0.88	17 0.95	17 0.97	18 1.04	18 1.06	19 1.13	19 1.16
15 0.53	15 0.55	16 0.60	16 0.62	16 0.65	17 0.70	17 0.73	17 0.76	18 0.81	18 0.84	19 0.90	19 0.93	19 0.96	20 1.02	20 1.05	21 1.12	22 1.18	22 1.22	23 1.29	23 1.32
18 0.59	18 0.62	19 0.67	19 0.70	19 0.73	20 0.78	20 0.81	21 0.87	21 0.90	22 0.96	22 0.99	23 1.06	23 1.09	24 1.16	24 1.19	25 1.26	26 1.33	26 1.37	26 1.40	27 1.48
21 0.65	21 0.68	22 0.74	22 0.77	23 0.83	23 0.86	24 0.92	24 0.95	24 0.99	25 1.05	25 1.09	26 1.15	27 1.22	27 1.26	28 1.33	28 1.37	29 1.44	30 1.52	30 1.56	
24 0.71	24 0.75	25 0.81	25 0.84	26 0.90	26 0.94	27 1.00	27 1.04	28 1.10	28 1.14	29 1.21	30 1.28	30 1.32	31 1.39	31 1.44	32 1.51	33 1.59			
27 0.78	27 0.81	28 0.87	28 0.91	29 0.98	30 1.04	30 1.08	31 1.15	31 1.19	32 1.26	32 1.30	33 1.38	34 1.45	34 1.50	35 1.58					
30 0.84	31 0.90	31 0.94	32 1.01	32 1.05	33 1.12	33 1.16	34 1.23	35 1.31	35 1.35	36 1.43	37 1.50	37 1.55							
34 0.92	34 0.97	34 1.01	35 1.08	35 1.13	36 1.20	37 1.27	37 1.32	38 1.39	39 1.47	39 1.52	40 1.60								
37 0.99	37 1.03	37 1.08	38 1.15	38 1.20	39 1.27	40 1.35	40 1.40	41 1.48	42 1.56										
40 1.05	40 1.10	40 1.15	41 1.22	42 1.30	42 1.35	43 1.43	44 1.51	45 1.60											

Consult SSI Nitrox Diver Manual for detailed instructions on use of this table.



■ = PO₂ in excess of 1.4 ATA/bar

■ = PO₂ in excess of 1.5 ATA/bar

WARNING

- Enriched Air Nitrox (EANx) diving entails additional risks not present when diving air, including the risk of Central Nervous System (CNS) oxygen toxicity, which can lead to loss of consciousness under water, resulting in serious personal injury or death. Obtain special training and certification from a qualified instructor before diving Nitrox.
- Use dive tables and other planning tools conservatively and correctly. Be aware, however, that even if you do so, decompression sickness or CNS oxygen toxicity may still occur.

CNS "CLOCK" EXPOSURE TIME TABLE

Partial Pressure of Oxygen (PO ₂)	Maximum Exposure Time in Minutes		— Actual Bottom Time in Minutes —												
	Single Dive Limit	24-Hour Limit	5	10	15	20	25	30	35	40	45	50	55	60	
0.6	720	720	1%	1%	2%	3%	3%	4%	5%	6%	6%	7%	8%	8%	
0.7	570	570	1%	2%	3%	4%	4%	5%	6%	7%	8%	9%	10%	11%	
0.8	450	450	1%	2%	3%	4%	6%	7%	8%	9%	10%	11%	12%	13%	
0.9	360	360	1%	3%	4%	6%	7%	8%	10%	11%	13%	14%	15%	17%	
1.0	300	300	2%	3%	5%	7%	8%	10%	12%	13%	15%	17%	18%	20%	
1.1	240	270	2%	4%	6%	8%	10%	13%	15%	17%	19%	21%	23%	25%	
1.2	210	240	2%	5%	7%	10%	12%	14%	17%	19%	21%	24%	26%	29%	
1.3	180	210	3%	6%	8%	11%	14%	17%	19%	22%	25%	28%	31%	33%	
1.4	150	180	3%	7%	10%	13%	17%	20%	23%	27%	30%	33%	37%	40%	
1.5	120	180	4%	8%	13%	17%	21%	25%	29%	33%	38%	42%	46%	50%	
1.6	45	150	11%	22%	33%	44%	56%	67%	78%	89%	100%	111%	122%	133%	

See reverse side for important warnings • Consult SSI NITROX DIVER MANUAL for detailed instructions on use of this table.

Maximum Operating Depth Table

EAN Mix (% oxygen)	MOD if ppO₂ = 1.40 (in meters)	MOD if ppO₂ = 1.60 (in meters)
25	46	54
26	44	52
27	42	49
28	40	47
29	38	45
30	37	43
31	35	42
32	34	40
33	32	38
34	31	37
35	30	36
36	29	34
37	28	33
38	27	32
39	26	31
40	25	30