



The British Sub-Aqua Club

FIRST CLASS DIVER

DIVING KNOWLEDGE EXAM March 2007

Name:

Please read the following instructions carefully before you begin answering the questions.

- **Answer all 30 questions.** Write your answers in the spaces on the question paper. Please remember to put your name on the paper.
- Brief answers are possible for most questions. Answer as concisely as possible. Use diagrams where these help your answer or where they are asked for.
- There are 2 marks for each question.
- The time allowed is 60 minutes.
- Write all answers in ink, as clearly as possible.
- You may use a calculator but please show all calculations.
- You will need your own copy of the complete BS-AC'88 Tables, levels 1-4 and BSAC Nitrox Tables. No other reference material of any kind is allowed.
- All questions assume sea water (density 1.025 kg/litre) and the prevailing conditions in the United Kingdom unless otherwise stated.
- Please check your work very carefully. A mistake at an early stage of some questions may result in a series of wrong answers and a loss of marks.

Please note that the mark awarded by the examiners for your performance on this paper is final and under no circumstances can the examiners enter into any correspondence or discussion with you regarding this paper.

Medical

1. How would you recognise hypothermia in a diver?

2. How would you treat a diver with hypothermia?

3. An older diver surfaces from a dive and once in the boat complains of chest pains.
Explain what your actions would be:

4. Briefly explain the cause of an arterial gas embolism (AGE).

5. List 4 conditions or situations that could make a person hypoxic.

6. You are diving off a hardboat. You recover one of your divers into the boat. Outline your actions when you find that the diver is unconscious and not breathing.

Decompression

7. Two divers plan to dive to 40m. Diver A is a BSAC Advanced Nitrox diver and wishes to dive using a computer which use deep stop RGBM algorithm (e.g. VR3). Diver B is a qualified ERD diver and wishes to dive using a computer which uses Haldane tables and shallow stops (e.g. Suunto). Both computers are multi-mix dive computers. Both divers wish to dive using their computers. What considerations should the divers use when planning their dives, in order to maximise their bottom time.

8. What considerations should be taken into account when diving at altitude?

9. What are the benefits of diving with Helium?

10. When referring to diving decompression what do the following acronyms stand for?

RGBM

VPM

pPN2

pP02

11. Draw a sketch of the emergency equipment which could be deployed in the event of an out of gas situation arising during an advanced drift dive.

12. Why are air breaks given during a recompression treatment in a recompression chamber or during emergency first aid?

Equipment

13. What would you expect to find in a coastal flare kit, and what does each do?
14. You have been given an old lifting bag of about 40kg by an old club member to use on a search and recovery course but are unsure of the size of the lifting bag or if it is still safe to use. How could you test the lifting bag for size and if it was still safe?
15. Briefly describe how you would use an oxygen analyser to analyse a nitrox mix?

16. What is DSC?

What channel does it operate on?

What is MMSI?

How many digits are in the MMSI?

17. You have been asked to purchase an Oxygen kit for your club what attributes would you want the kit to have?

18. In dive torches what do the following stand for:

HID

LED

Ni Cad

Li on

Dive planning and techniques

19. You are the Dive Manager for a group of 12 divers all of whom are mixed gas qualified. You are planning dives in the 40 to 75 metre range in UK coastal waters. As Dive Manager list 5 areas you need to take into account at this stage of the trip (2 months before departure).

20. Four of the team approach you 2 days before departure with a written plan and request to conduct 2 dives on a wreck to 88 metres, this can be done without inconveniencing the other divers in the party. What is your response?

21. You have a BSAC Extended Range Diver whose qualification card authorises use of 80% Nitrox for decompression. They come along with a 100% decompression mix. What is your response?

22. Prepare a run time schedule, showing gas switch points based on max PO₂ 1.4 bar for bottom gas and max PO₂ 1.5 bar for decompression gas, for the following dive information based on a descent rate of 15 metres/min and ascent rate of 10 metres/min to first decompression stop. **Dive time for this question is defined as time from leaving the surface to leaving the bottom to start the ascent and you may assume instant transfer between decompression stops.**

Bottom Gas Air
Decompression Gas 60% Nitrox
Max Depth 47 Metres
Dive Time 25 minutes
Stops (depth/minutes)

Stop at	27m	1:00
Stop at	24m	1:00
Stop at	21m	2:00
Stop at	18m	3:00
Stop at	15m	3:00
Stop at	12m	3:00
Stop at	9m	4:00
Stop at	6m	3:00
Stop at	4.5m	15:00
Surface		

23. You see an orange and a yellow DSMB together on the same line. List 4 things you should do.

24. You have a group of 8 newly trained Ocean Divers (2007 DTP) for their first sea dive in March, you also have 4 Sports Divers (qualified in 2006). They all want to use Nitrox 36 as a dive gas. What do you need to take into account for your Risk Assessment?

Weather & Seamanship

25. Draw a rough outline of the British Isles, and the direction of travel a Polar Continental air mass is likely to take and the associated isobars with it.

What months of the year is this air mass likely to affect the British Isles?

26. In the shipping forecast the term Hurricane Force is used rather than the term Hurricane. Why is this?

27. What is/are the colours of the new buoy introduced by the IALA for identifying dangerous new wrecks. What is the lighting procedure?

28. For how long will the new buoy remain on station?

29. What is Variation and Deviation?

30. Describe the lighting sequence for

- a) Occulting
- b) Isophase
- c) Flashing