Information Note
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IMCA Bell Diving Supervisor Examination – Recommended Study Material

IMCA is frequently asked for a study guide to help candidates preparing to sit the IMCA Bell Diving Supervisor certification examination.

As part of the recent revision of the IMCA exam system, all IMCA Supervisor and LST exams are now generated from a question bank, ensuring that no two exams are the same. In addition, the exam is now delivered electronically at a nominated exam centre with candidates only viewing one exam question at a time. It would therefore be advantageous for anyone planning to sit the BDS exam to be comfortable with taking online tests and using online calculators. Where practicable, it would be useful for BDS candidates to practice taking online quizzes/tests and using online calculators before sitting the IMCA examination.

The Exam

It is made up of four sections as follows:

1. Diving Physics; 20 Questions
2. Diving Physiology; 20 Questions
3. Chamber Practices; 20 Questions
4. Bell Diving Operations. 40 Questions

The IMCA BDS exam is primarily based around the content of the material contained in IMCA's guidance documents. A core text that should be used for study is Guidance for diving supervisors (IMCA D 022). It is essential that supervisor candidates are familiar with all the relevant material this document contains.

Chapter 2 Diving Physics is of particular importance. It contains a series of self-test physics questions. Candidates should be confident answering each of the relevant questions. Failure to do so means it is unlikely that candidates will pass the physics section of the final exam. It also should be pointed out that several questions within the diving and chamber practices section of the exam are based on the knowledge and experience gained whilst working as a trainee supervisor.

Study Guide

In preparation for the exam, in addition to IMCA D 022, it is essential that candidates for the BDS exam have a sound working knowledge of all IMCA and DMAC guidance, and in particular the following documents:

- Guidelines for oxy-arc cutting (IMCA D 003)
- Diving operations in the vicinity of pipelines (IMCA D 006)
- Diving operations from vessels operating in dynamically positioned mode (IMCA D 010)
- IMCA international code of practice for offshore diving (IMCA D 014)
- Open parachute type underwater air lift bags (IMCA D 016)
- Lost bell survival (IMCA D 017)
- Diving in contaminated waters (IMCA D 021)

- Guidance for diving supervisors (IMCA D 022)
- DESIGN for surface orientated (air) diving systems (IMCA D 023)
- DESIGN for saturation (bell) diving systems (IMCA D 024)
- Installation based diving operations and the evacuation of divers from installations (IMCA D 025)
- Guidance on the use of chain lever hoists in the offshore subsea environment (IMCA D 028)
- Surface supplied mixed gas diving operations (IMCA D 030)
- Cross-hauling of bells (IMCA D 032)
- Neurological assessment of a diver (IMCA D 036)
- DESIGN for surface supplied mixed gas diving systems (IMCA D 037)
- Use of battery operated equipment in hyperbaric conditions (IMCA D 041)
- Diver and ROV based concrete mattress handling, deployment, installation, repositioning and decommissioning (IMCA D 042)
- Code of practice for the safe use of electricity under water (IMCA D 045)
- Guidance on surface supplied diving operations using nitrox (IMCA D 048)
- Guidance on hyperbaric evacuation systems (IMCA D 052)
- Remotely operated vehicle intervention during diving operations (IMCA D 054)
- Diver attachment to structures by means of a weak link (IMCA D 058)
- Guidelines for lifting operations (IMCA D 060)
- Guidance on health, fitness and medical issues in diving operations (IMCA D 061)
- Guidelines for the design and operation of dynamically positioned vessels (IMCA M 103)
- Aide mémoire for recording and transmission of medical data to shore (DMAC 01)
- Recommendations for flying after diving (DMAC 07)
- Safe diving distance from seismic surveying operations (DMAC12)
- Medical equipment to be held at the site of an offshore diving operation (DMAC 15)
- Proximity to a recompression chamber after surfacing (DMAC 22)
- Saturation diving chamber hygiene (DMAC 26)
- Provision of emergency medical care for divers in saturation (DMAC 28)

Other relevant information

All published IMCA videos are available to stream online and it would be helpful for BDS candidates to review all relevant IMCA videos as part of their preparation for the IMCA examination. A link to the IMCA videos is shown below:

https://www.youtube.com/user/IMCAint/videos

Candidates should also be familiar with the latest revision of the US Navy Diving Manual, Volume 3, Section 13 Saturation Diving together with the use of Saturation Decompression Tables and Emergency Decompression.

The US Navy Manual is available as a free download from:

https://www.navsea.navy.mil/Portals/103/Documents/SUPSALV/Diving/US%20DIVING%20MANUAL_REV7.pdf?ver=2017-01-11-102354-39

Legislation

Candidates who wish to sit the optional legislation module should be familiar with the following:

- UK legislation – Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR 2013) (see INDG 453 https://www.hse.gov.uk/pubns/indg453.pdf)
- HSE Commercial Diving Projects Offshore Approved Code of Practice L103

  (https://www.hse.gov.uk/pubns/books/l103.htm)
- The Health and Safety at Work etc Act 1974: Sections 2-9

http://www.legislation.gov.uk/ukpga/1974/37/pdfs/ukpga_19740037_en.pdf

- HSE List of Approved Diving Qualifications for Closed Bell Diving

https://www.hse.gov.uk/diving/qualifications/approved-list.pdf

These are available to download for free at http://www.hse.gov.uk/pubns/books/l103.htm.

Preparation

In preparation for the exam it is recommended that candidates who wish to achieve any IMCA supervisor certification should start a programme of disciplined self-study long before they apply to sit the exam.

This is to ensure that they have the best chance of passing the exam at the first attempt, but it is also to ensure that every candidate has a thorough understanding of all the documents and procedures that a supervisory position demands. In addition, consideration should be given to undertaking a review session in the run-up to the exam at a training establishments offering the IMCA Trainee Bell Diving Supervisor (TBDS) training programme. A list of establishments currently offering IMCA-approved trainee BDS training is available on IMCA's website at:

https://www.imca-int.com/divisions/diving/personnel/diving-supervisor/bell-courses/

Supervisor candidates who do not prepare adequately will find the exam a challenge to pass, in particular the physics and diving operations sections.

The time allowed to sit the BDS and legislation exams are:

- IMCA Bell Diving Supervisor – 2.5 hours
- Legislation Module UK – 30 minutes

Candidates who do not speak English as a first language or who are not familiar with online examinations and calculators should ensure they are adequately prepared before sitting the exam. In addition, an allowance has been made within the exam timings for candidates working in a second language.

IMCA BDS Sample Exam Questions

Please find detailed below a number of sample questions indicative of the type of questions contained within the IMCA BDS Exam.

Physics

1. You have to treat a bend in a diver at 95 msw and will complete 4 cycles of 30 minutes duration, working on a consumption of 40 litres per minute measured at the surface, you will use:

   a) 4.8 m3

   b) 5.6 m3

   c) 50.4 m3

   d) 456.0 m3

2. To administer a treatment gas to a diver at 600 fsw with a 2.5 PPO2 requires:

   a) 10%

   b) 13%

   c) 17%

   d) 20%

Physiology

3. With which one of the following can vestibular decompression illness be associated?

   a) Changing from breathing air to breathing mixed gas

   b) Changing from breathing mixed gas to breathing air

   c) Nitrox saturation

   d) Prolonged exertion on low PPO2 mixes

4. A diver in a chamber shows signs of respiratory distress which worsen with decompression. Recompression affords him immediate relief and this exact pattern is repeated on several occasions. From which one of the following is he suffering?

   a) Embolism

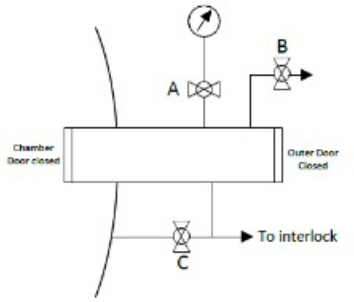
   b) Lung oedema

   c) Pneumothorax

   d) Type I decompression sickness

Chamber Practices

5. Which is the correct operating procedure for taking the medical lock to the surface, shown below (valves are shown closed)?



a) Open A, close C, open B

b) Open C, close A, open B

c) Open B, close C, open A

d) Open B, open C, close A

6. You have been asked by the LSS to connect a new gas supply to the chamber control panel. What is the most important precaution to take?

a) Open all valves slowly

b) Check that the gas has been analysed

c) Check pressure

d) Check analysers have been calibrated

Bell Diving Operations

7. What is the recommended minimum breaking load of a bell winch wire?
a) 1.1 times the safe working load

b) 1.5 times the safe working load

c) 5 times the safe working load

d) 8 times the safe working load

8. In accordance with IMCA guidelines, which one of the following is the Common Emergency Reply Frequency on which a bell emergency location transponder operates?

a) 33.5 kHz

b) 34.5 kHz

c) 37.5 kHz

d) 42.5 kHz

9. When working in the vicinity of an impressed current anode system operating at 24 volts DC:

   a) A line insulation monitor should be fitted

   b) The diver may go as close as he likes to the system when the power is on

   c) The diver should remain at a minimum distance of 10 feet from the system

   d) The power should be off

10. What are the main requirements for a digital gauge?

    a) It must read in feet of seawater, it must display the reading to one decimal point, it must be24v

    b) It must read in metres of seawater, it must display the reading to one decimal point, it must be large and clear enough to be read easily and accurately

    c) It must be large and clear enough to be read easily and accurately, it must display clearly on the unit whether it reads in feet or metres, it must be 24v

    d) It must display clearly on the unit whether it reads in feet or metres, it must be large and clear enough to be read easily and accurately, it must display the reading to one decimal point

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