

9.3 CMAS-ISA 1 STAR DIVER CERTIFICATE CMAS EQUIVALENT – 1 STAR DIVER

(Depth limit - 18 meters)

9.3.1 OBJECTIVE

To supply a framework for the training of Novice Divers enabling them to obtain the One Star Sport Diver qualification.

9.3.2 SYLLABUS

Prescribed manual: CMAS One Star Diver Manual

The candidate shall receive tuition in the theory of:

- a. Basic and Scuba Equipment: Mask, Snorkel, Fins, Wet Suit, Weight Belt, Knife, Dive Watch, Scuba Cylinders, Demand Valves, Pillar Valves, Pressure Gauges, Depth Gauges, BC's.
- b. Snorkel and Scuba Techniques: Pre/Post Dive Routine, Entries, Exits, Signals, Mask Clearing, Buoyancy Compensation, Buddy breathing, Doffing and Donning, BC's use.
- c. Scuba Diving Physics: Archimedes' Principle, Water Viscosity, Temperature and Heat Loss, Light and Vision, Sound, Boyle's Law, Dalton's Law, Henry's Law, Charles' Law, Combined Gas Law.
- d. Scuba Diving Physiology: Circulatory system, Lung function, Hypoxia, Anoxia, Hyperventilation, Hyper- and Hypothermia, Shock, Cramp, Exhaustion, Effects of Pressure, Barotrauma, Nitrogen Narcosis, Decompression Sickness.
- e. Decompression: Decompression, Use of no stop table, Rate of Ascent, Altitude, Exercise, Flying after diving.
- f. Scuba Dive Planning: Dive Plan and Profile, Shore dives, Boat dives, Air Endurance.
- g. Rescue and Resuscitation: CPR, EAR and General First Aid, Underwater Rescue, Possible Complications.
- h. Free diving and Scuba Activities

THEORY LESSONS:

- T 1 Course aims and administration**
- T 2 Introduction to equipment**
- T 3 Elementary signals**
- T 4 Pressure/Volume relationships**
- T 5 Principles and use of SCUBA**
- T 6 Basic physiology**
- T 7 Buoyancy devices**
- T 8 Diving suits & other equipment**
- T 9 Equipment care**
- T 10 Self Rescue & Buddy Rescue**
- T 11 Safe Diving Practices**
- T 12 Site selection, Conservation**

PRACTICAL LESSONS:

- P 1 Introduction to equipment**
- P 2 SCUBA Skills 1**
- P 3 Snorkelling and SCUBA Skills 2**
- P 4 SCUBA Skills 3**
- P 5 SCUBA Skills 4**
- P 6 Rescue Skills**
- P 7 SCUBA Skills review**
- P 8 Skills tests**
- P 9 Open Water Dives**

9.3.3 PREREQUISITES

1. Must be at least 14 years old.
2. Must submit a medical certificate clearing the holder as fit to participate in the sport of underwater diving before participating in any practical training. A medical practitioner using the CMAS-ISA Sport Diving Medical Examination Form must have carried out the medical examination. The certificate must not be older than 3 months where an individual is attending a CMAS-ISA course for the first time, and not older than 12 months when the One Star certificate or any other subsequent certificate is finally issued.
3. Must pass the theory examination as set by a panel of Instructors, or as set by CMAS-ISA. A pass mark of 65% is compulsory.
4. Must pass the A, B, C & D practical tests.
5. Must log at least 5 scuba dives in open water and have these verified by at least an in-date Two Star Instructor. The dives are to be of at least 15 minutes duration and to a depth not exceeding 18m.
6. Must apply for the certificate through the Instructor.

NOTE: Parts 3, 4 & 5 must be completed within 1 year of writing the theory examination. Failing which, parts 3 and 4 must be re-done.

The above mentioned prerequisites are the minimum required for the CMAS-ISA One Star Diver Certificate.

9.3.4 TRAINING PROGRAMME

A diver who is competent in the theory of safe and correct use of all appropriate open water scuba diving equipment in a sheltered water training area is ready to gain open water diving experience in the company of his/her instructor. Practical teaching sessions should take place in a swimming pool or confined water with swimming pool like conditions.

These are guidelines to assist the instructor in planning the course.

CONTENT OF THEORETICAL LESSONS

T 1 - COURSE AIMS AND ADMINISTRATION

1. This introductory lesson should explain the purpose of the training programme and its position in the diver certification system, the relation ship between the school/club, SAUU/CMAS-ISA and C.M.A.S., and the basis of the C.M.A.S. International Divers Certificate System. Administrative details concerning meeting times and location, timetables, equipment to be supplied or brought. Aims of the course, organisation of the school/club.
2. Logbook and qualification records.

(Time: 20 minutes)

T 2 - INTRODUCTION TO DIVING EQUIPMENT

1. The purpose, function and selection of the mask, fins, snorkel and weight belt.
2. Mask, fins, snorkel: construction, features, fitting, maintenance, testing, suitability
3. Weight belt: features, fitting, release operation, importance of neutral buoyancy
4. Brief description of SCUBA elements
5. Equipment to be used on the course
6. Warnings about breath-holding, squeeze

(Time: 30 minutes)

T 3 - ELEMENTARY SIGNALS

1. Reasons for using hand signals underwater and at the surface.
2. Importance of using the C.M.A.S. International Code of Underwater Signals.
3. Diver to diver signals
4. Diver to surface party signals
5. Signals to be used during course
6. Importance of response to signals

(Time: 25 minutes)

T 4 - PRESSURE/VOLUME RELATIONSHIP

1. The basic physics affecting diving
2. Atmospheric, hydrostatic and absolute pressure.
3. Relationship between pressure and volume (Boyle's laws).
4. Gases under pressure, composition of air.
5. Effects of pressure on body air spaces, changes in pressure.
6. Compression problems: mask squeeze, ear and sinuses under pressure, equalisation.
7. Expansion problems, breath holding.
8. Buoyancy factors and adjustment

(Time: 40 minutes)

T 5 - PRINCIPLES AND USE OF SCUBA

1. The function of SCUBA, in principle only.
2. Reduction of air pressure from high to ambient.
3. Ability to carry large amount of air with the diver.
4. The air cylinder, its charging and care.
5. The regulator, its function and care.
6. Pressure gauges and other ancillary equipment.
7. Using SCUBA, preparation and fitting.

(Time: 30 minutes)

T 6 - BASIC PHYSIOLOGY

1. The human life support system, the respiratory system, the metabolic process.
2. The gas exchange within the lungs, the role of each gas.
3. Exhaustion, drowning, hypoxia, hypothermia and the prevention of each.

(Time: 40 minutes)

T 7 - BUOYANCY DEVICES

1. Importance of wearing a buoyancy compensator for comfort during the dive and for use in an emergency, at the surface or underwater.
2. Essential features of different types of buoyancy devices.
3. Suitability for different types of diving.
4. Dangers of rapid ascent, controlling ascent.
5. Use for buoyancy adjustment, recommended procedure
6. Methods of inflation, MP air, HP air, oral, CO₂, advantages / disadvantages
7. Preparation, fitting, care

(Time: 30 minutes)

T 8 - DIVING SUITS AND ANCILLARY EQUIPMENT

1. Need for protection in all but warmest waters, abrasion and marine life protection.
2. Equipment to be used on the course.
3. Advantages/disadvantages of different types.
4. Wet/dry suits.
5. Selecting a suit, type.
6. Fitting and care.
7. Instrumentation, depth gauge, watch, compass, HP gauge, combinations, dive computers.
8. Torch, knife, buoys, lines, bag, slate.

(Time: 30 minutes)

T 9 - EQUIPMENT CARE

1. Importance of a proper maintenance procedure for all diving equipment.
2. Pre-dive preparation, after-dive care.
3. Value of fresh water rinse and general cleanliness
4. Special care for perishable items, rubber, suits.
5. Prevention of corrosion to metal parts.
6. Protection for damage in transport.
7. Regular testing and servicing.
8. Storage, off-season.

(Time: 30 minutes)

T 10 - SELF RESCUE AND BUDDY RESCUE

1. Accident prevention through careful planning.
2. Recognise the signs and take early action.
3. Assess the required action and select, correct course of action.
4. Self-help and self-rescue techniques.
5. Correct techniques for shared ascent, buoyant ascent, and free ascent.
6. Expired air resuscitation, on the surface and in the water.
7. Towing and landing a victim.
8. Summoning and using help.

(Time: 40 minutes)

T 11 - SAFE DIVING PRACTICES

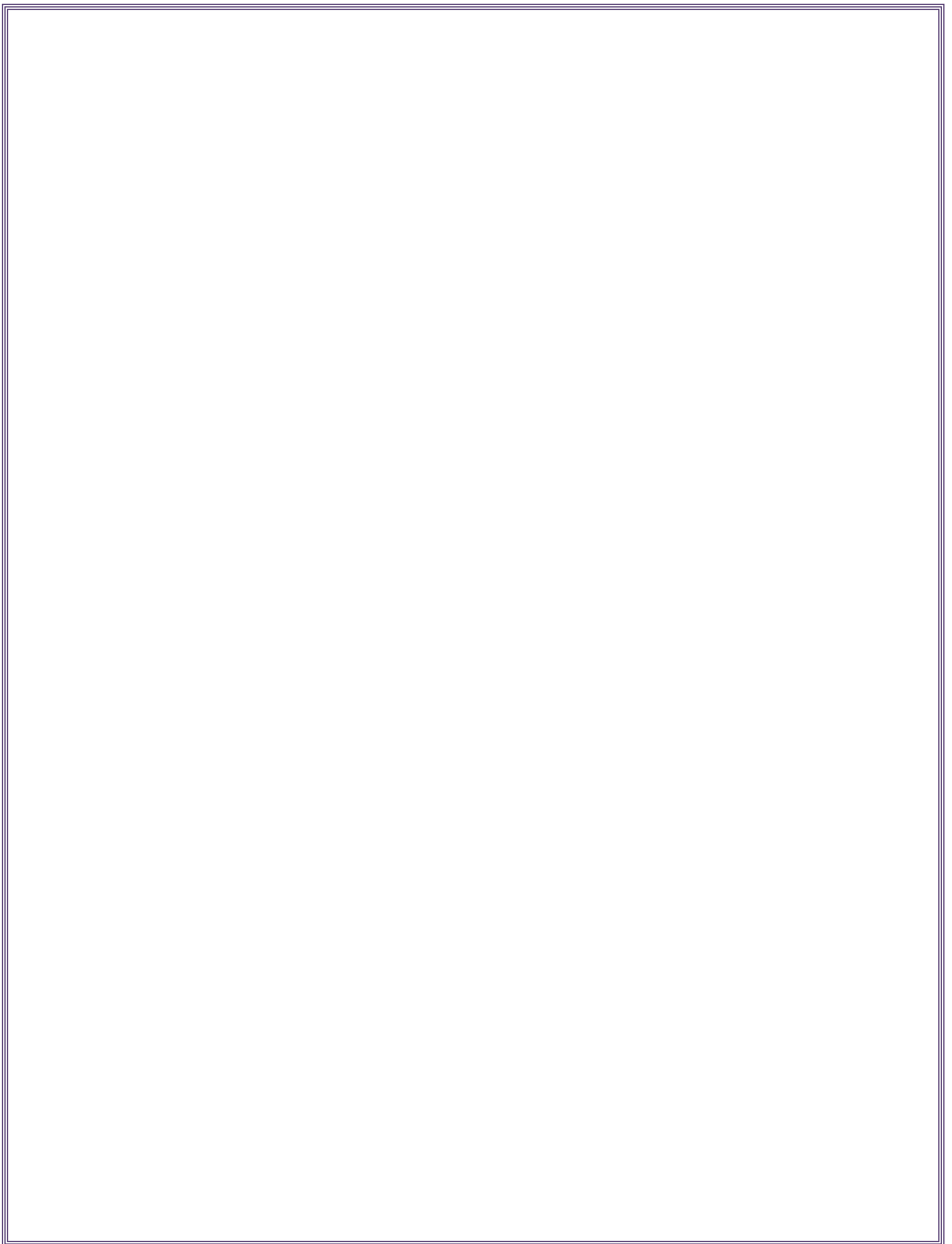
1. The correct conduct for open water diving practice.
2. The dive leader, his role in the dive.
3. Dive planning, to identify and avoid problem areas.
4. The buddy system and essential elements in dive safety.
5. Pre-dive preparation, equipment checks, briefing.
6. Entry, buoyancy check, descent, conduct of the dive, ascent, surfacing, leaving the water.
7. Emergency procedures, separation.
8. International Code of Signals.

(Time: 40 minutes)

T 12 - SITE SELECTION AND CONSERVATION

1. How to choose a dive site.
2. What features to look for and what to avoid.
3. The effect of weather and tides.
4. Marine and aquatic life, what to look for, how to recognise it.
5. Attitude to marine life and the environment, importance of conservation.
6. Reasons to dive and things to do.
7. Dangerous marine life, avoidance, treatment.

(Time: 30 minutes)



CONTENT OF PRACTICAL LESSONS

P 1 - INTRODUCTION TO EQUIPMENT

1. In this session the student will be introduced to the mask, fins and snorkel and their use, and will gain an appreciation of the effects of mask squeeze and ear clearing in shallow water. The buddy system will be employed from the first opportunity.
 2. Fitting the mask, adjustment, de-misting, equalising.
 3. Fitting the snorkel, surface breathing, clearing by blowing and displacement.
 4. Fitting the fins, adjustment, correct finning action, practice period.
 5. Surface swimming, surface dives, and surfacing technique using mask, fins and snorkel.
 6. Treading water, vertical finning, surface support stroke.
 7. Brief introduction to SCUBA, fitting, breathing and swimming.
- (Time: 60 minutes)

P 2 - SCUBA SKILLS 1

1. Assembling the SCUBA set, fitting and checking the regulator, air supply, fit of harness, buoyancy/weight equipment.
 2. Entering the water, breathing from the aqualung in different attitudes, checking and adjusting buoyancy.
 3. Finning and moving while wearing SCUBA.
 4. Remove, replace and clear mouthpiece.
 5. Remove, replace and clear mask.
 6. Breathe from alternative air supply.
 7. Static sharing SCUBA.
 8. Surfacing and leaving water.
- (Time: 60 minutes)

P 3 - SNORKELLING AND SCUBA SKILLS 2

1. Snorkelling skills, entering the water, leaving the water.
 2. Feet first descent.
 3. Surface dives while swimming.
 4. Longer breath-hold dives.
 5. Removing and recovering basic equipment.
 6. Using and fitting a weight belt.
 7. Repeat mask and snorkel clearing
 8. SCUBA skills, entering and leaving the water.
 9. Improve mouthpiece clearing and mask clearing technique.
 10. Improve finning technique.
 11. Demonstrate buoyancy control.
 12. Share SCUBA following "out of air" simulation.
 13. Remove SCUBA at surface.
- (Time: 60 minutes)

P 4 - SCUBA SKILLS 3

1. Further entry techniques.
 2. Improve basic techniques, mask clearing, finning.
 3. Mobility exercises, rolls, buoyancy control.
 4. Remove and replace weight belt underwater.
 5. Remove and replace SCUBA underwater.
 6. Surface, fit snorkel and swim on surface using snorkel while wearing SCUBA, replace SCUBA mouthpiece and descend.
 7. Exit from water via ladder from deep water.
- (Time: 60 minutes)

P 5 - SCUBA SKILLS 4

1. Improve familiarity with buoyancy device.
2. Inflate for surface support.
3. Control buoyancy at bottom and in mid-water.
4. Control rate of ascent by release of air, demonstrate ability to stop.
5. Use of buoyancy for lift in an emergency, controlled buoyancy lift.
6. Rapid dumping of air, use of alternative inflation systems.

(Time: 60 minutes)

P 6 - RESCUE SKILLS

1. Controlled buoyancy lift of victim to surface.
2. Surface support and towing.
3. Correct position for expired air resuscitation (EAR) at surface, importance of neck extension.
4. Calling and signaling for help.
5. Practice CPR on land.

(Time: 60 minutes)

P 7 - SCUBA SKILLS REVIEW

1. In this lesson, all the equipment that will be used on open water dives, including wetsuit, is re-introduced and the skills already learned are practiced while fully equipped.
2. Exercises are carried out in the full depth of sheltered water available and the opportunity is taken for final improvement of any techniques still required.

(Time: 60 minutes)

NOTE: On completion of each lesson the instructor should assess the student's ability and ensure that they have adequately acquired the skills included in each lesson. It is particularly important that this assessment is made during lessons session 4 and session 6.

PRACTICAL SESSION 8 - SKILLS TEST

The combination of tests performed in sequence will provide a measure of the student's fitness and stamina. It must be remembered that, after this lesson, suitable students are considered ready to continue their training in open water.

NOTE: All skills tests to be conducted by at least an in-date Two Star Instructor. Tests A, B, & C are to be carried out during one practical session in the same swimming pool. The pool should be at least 2m deep and preferably 3 to 5m deep. A rest period of one minute is allowed between tests unless otherwise stated.

A. To be carried out in the swimming pool wearing either a swimsuit only or a wetsuit with neutralising weight belt.

1. Swim 200m freestyle. No rest allowed during the swim. Crawl, breaststroke or butterfly style may be used.
2. Float on back for 5 minutes during which slight arm and leg movements are allowed. Alternatively use any other drown proof technique for 5 minutes.
3. Tread water either with arms folded across the chest or hand and arms held up to the elbows above the water for 1 minute.
4. Do proper duck dives and recover 2 objects from no less than 2m (3 to 5m is preferred).
5. Sink basic equipment in no less than 2m of water (3 to 5m is preferred). Dive each individual item separately and refit on the surface. If wearing a wetsuit, the neutralising weight belt must not be removed.

6. Whilst treading water, do an emergency weight belt release with one hand, catching it with the other hand and pass it to a person on the poolside. Retrieve the weight belt from the person and refit whilst still treading water. If no wetsuit is worn, still do this test using a weight belt equal to 5% of normal body weight.
7. Fin 25 m underwater finishing in the deep end. Surface, clear snorkel and breath through snorkel for 1 minute with head submerged.
8. Immediately thereafter, submerge completely and hold breath for 30 seconds while remaining submerged. Surface.
9. Remove mask and sink it in no less than 2m of water. Fin swim 25m with face submerged, breathing through snorkel only. Both hands should be behind the back, although one hand may be used to stabilise the snorkel.
10. Return to mask, recover and refit on the surface.

B. To be carried out in swimming pool wearing full scuba equipment, wetsuit, weight belt and BC.

1. Do the complete scuba pre-dive routine including the BC and fit diving equipment.
2. Perform at least one neat entry as prescribed by the examiner.
3. Submerge and demonstrate buoyancy control without the use of the BC.
4. At the deep end of the pool remove, replace, refit and clear mask 3 times.
5. Take the demand valve out of the mouth, replace and purge. Repeat this 3 times.
6. Perform 3 forward and 3 backward rolls. No surfacing is allowed between rolls.
7. Surface whilst exhaling. Remove scuba equipment, fit snorkel and tow scuba equipment for 50m, finishing in the deep end of the pool.
8. Refit all equipment, descend at the deep end of the pool, remove and refit scuba equipment without surfacing. Surface whilst exhaling, fully kitted.

C. To be carried out in the swimming pool, wearing full scuba equipment, wetsuit, weight belt and BC.

1. Orally inflate the BC and demonstrate emptying of the air in the BC in order to submerge.
2. Demonstrate underwater the ability to increase and decrease buoyancy with the aid of the BC.
3. Demonstrate the use of an additional air supply i.e. pony bottle or power inflator, as well as the emergency dumping of air.
4. Fin 150m on the surface wearing scuba equipment but breathing through the snorkel.
5. Submerge at the deep end of the pool, signal "I am out of air" and "I am going up". Remove mouthpiece, fit snorkel, ascend and surface whilst exhaling. Signal "I am OK" on surfacing.
6. Submerge and share air from scuba equipment with a buddy for 25m while not exceeding 3m in depth. Change over to buddy's scuba equipment and share air for another 25m. Surface.
7. Fin 25m using a blacked out mask, either being led by another diver or following a rope. Surface.
8. Fin 25m underwater to the deep end where a buddy is simulating unconsciousness. Demonstrate rescue techniques and the use of your buddy's BC to surface.
9. Simulate lifesaving techniques and E.A.R in the water while towing a buddy for 25m. Remove the scuba equipment in the water and continue with resuscitation techniques on dry land.
10. Complete the post dive routine.

D. To be carried out in open water under controlled conditions wearing basic equipment only. A wetsuit together with a neutralising weight belt may be worn. Tests 1 & 2 to be performed if not in possession of a Snorkel certificate.

1. Fin 600m on the surface in open water.
2. Do a snorkel dive to a depth of at least 8m and signal "I am OK" on surfacing.

To be carried out in open water under controlled conditions wearing full scuba.

3. Do complete pre-dive routine.
4. Orally inflate the BC, enter water with mask in hand, fit and clear. Empty the air in the BC in order to submerge and descend to 10m depth.
5. Demonstrate the ability to increase and decrease buoyancy with the aid of the BC.

6. Demonstrate the use of an additional air supply i.e. power inflator as well as the emergency dumping of air.
7. At 10m depth, remove, refit and clear mask.
8. At 10m depth, remove, refit, and purge mouthpiece of demand valve.
9. Give, receive and interpret CMAS approved hand signals.
10. At 10m depth, share air with your buddy for 1 minute, change over to your buddy's scuba equipment and share air for a further 1 minute.
(NO surfacing allowed during this exercise).

NOTE: Test D does not count as one of the 5 qualifying dives, but the tests may form part of the qualifying dives.

PRACTICAL SESSION 9 - 5 OPEN WATER DIVES

Perform a further 5 additional qualifying scuba dives under the supervision of at least an in-date 2 Star Instructor. These dives are to be limited to a maximum depth of 18m and a duration of at least 15 minutes. Only 2 non-decompression dives are to be executed per day.

9.3.4 ASSESSMENTS

Before granting the qualification, the instructor should ensure that the student has retained and understood the knowledge required being a safe One Star diver.

The assessment will usually take the form of a prepared written evaluation using "multi-choice" questions that allow coverage of many topics in a short period. Weaknesses that are suggested by the result of this paper can then be investigated by further oral questioning if necessary.

THEORY ASSESSMENT

The assessment format shall be as follows:

Section A	
20 Short questions testing elementary Scuba Diving knowledge.	20 marks
Section B	
Short questions on basic and scuba equipment knowledge.	20 marks
Section C	
Short questions on diving physics.	20 marks
Section D	
Short questions on diving physiology and medical aspects.	20 marks
Section E	
Short questions on hyperventilation, hypothermia and hyperthermia	20 marks
Section F	
Short questions on rescue and emergency procedures.	30 marks
Section G	
Short questions on dive planning and decompression diving.	20 marks

Time allowed for the Examination is 3 hours. Total marks = 150.

SKILLS ASSESSMENT

On completion of each lesson the instructor should assess the student's ability and ensure that they have adequately acquired the skills included in each lesson.

Apply for the certificate via the Instructor.