

REPUBLIC OF THE MARSHALL ISLANDS
MARITIME ADMINISTRATOR

**GUIDELINES FOR
MOU OFFICERS' EXAMINATIONS
(OFFSHORE INSTALLATION MANAGER,
BARGE SUPERVISOR, BALLAST CONTROL OPERATOR,
MAINTENANCE SUPERVISOR, ASSISTANT MAINTENANCE
SUPERVISOR)**



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Rev. Mar/2017

MI-325

EXAM GUIDELINES (MI-325)
REVISION HISTORY

Rev	Date mm/yy	Description	Entered By	Entered mm/dd/yy
3	3/1/17	Minor edit to Introduction; updated with the addition of Chapter II (Syllabus), MOU Offshore Installation Manager, And Barge Supervisor §1.0 Offshore Operations, §2.0 Stability, §3.0 Regulations, Safety, and Communications; MOU Ballast Control Operator, §1.0 General, §2.0 Stability, Ballasting, and Deck Operations, §3.0 Offshore Operations; MOU Maintenance Supervisor and Assistant Maintenance Supervisor, §1.0 Motors, §2.0 Auxiliary Power Generation, §3.0 Auxiliary Machinery, §4.0 Safety and Engineering Administration, §5.0 General Engineering; edits to Chapter III (Examination Procedures), Offshore Installation Manager (OIM), Barge Supervisor; Ballast Control Officer; edits to Figure 1, Time Table for OIM, BS, and BCO Examination Papers; edits to Figure 2, Time Table for Maintenance Supervisor and Assistant Maintenance Supervisor Officers' Examination Papers; added title to Chapter VI (Sample Questions and Answer Key), Deck; updated TOC	M. Sparks	3/1/17
2	3/31/16	Added Annex – Proctor Guide, updated TOC	M. Sparks	3/31/16
1	3/1/16	Updated with addition of Chapter II (Syllabus), MOU Maintenance Supervisor and Assistant Maintenance Supervisor §1.0 Motor, §2.0 Auxiliary Power Generation §3.0 Auxiliary Machinery §4.0 Safety and Engineering Administration & §5.0 General Engineering	M. Sparks	3/1/16

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I. INTRODUCTION

The Republic of the Marshall Islands (RMI) Maritime Administrator's (the "Administrator") examination system reflects the provisions of the International Convention on Standards of Training, Certification, and Watchkeeping, 1978, as amended (STCW). Under this system, the examinations consist of multiple-choice questions randomly compiled from a database of some 10,000 questions, each appropriate for the competency being tested.

Certain training pre-requisites for certification apply. It is recommended that the publication MI-118E, *Requirements for Seafarer Certification by Examination*, be consulted to determine which other examinations, certified training or sea service may be required by the Administrator before an examination may be taken.

Examinations can be taken at selected RMI Regional Offices or at an examination center that is approved by the Administrator. Examinations shall normally be conducted on weekdays commencing at 0900 hours local time and terminating at 1700 each day. However, a candidate is required to conform to the office hours of the individual facility where these differ from the normal schedule.

This booklet has been assembled to familiarize candidates for Mobile Offshore Unit (MOU) Officer's examinations in the capacities that follow in Chapter II with the examination syllabus and format. It contains information on:

- a. the examination syllabus;
- b. the examination procedures and passmark requirements;
- c. examination answer sheet instructions: general advice on taking multiple-choice examinations;
- d. specimen examination questions, with an answer key;
- e. a study bibliography and sources where the recommended books may be ordered; and,
- f. a table of SI and Imperial units and conversion factors.

Candidates for Oil Installation Manager (OIM) must provide evidence they have successfully completed courses in Well Control (Well Cap, Blowout Protection) and advanced MOU stability.

Candidates for Barge Supervisor (BS) and Ballast Control Operator (BCO) must provide evidence they have successfully completed a MOU stability course for Barge Supervisors.

II. SYLLABUS

Candidates are advised that each section in the syllabus will be examined. In each examination, all questions carry equal marks.

MOU OFFSHORE INSTALLATION MANAGER, AND BARGE SUPERVISOR

1.0 OFFSHORE OPERATIONS

- 1.1 Inspections and Surveys
- 1.2 Salvage
- 1.3 Communications
- 1.4 Weather
- 1.5 Deck Operations
- 1.6 MOU Construction
- 1.7 Logbooks
- 1.8 Anchoring and mooring
- 1.9 Ground tackle stresses

2.0 STABILITY

FOR SHIPS AND MOUs

- 2.1 Hydrostatics
- 2.2 Stability at Small Angles of Heel
- 2.3 Effects of Loading, Discharging, and Shifting Weights; Trim
- 2.4 Free Surface Effect; Deckloads; Anchor System Correction
- 2.5 Stability at Large Angles of Heel
- 2.6 Damage Stability
- 2.7 Towage

3.0 REGULATIONS, SAFETY, AND COMMUNICATIONS

- 3.1 Marshall Islands Maritime Law (MI-107) – open book
- 3.2 Marshall Islands Maritime Regulations (MI-108) – open book
- 3.3 MARPOL – open book
- 3.4 SOLAS – open book
- 3.5 General Safety
- 3.6 First Aid
- 3.7 Lifesaving and survival
- 3.8 Firefighting
- 3.9 Communications – Signaling – Publication 102

MOU BALLAST CONTROL OPERATOR

1.0 GENERAL

- 1.1 Lifesaving – survival
- 1.2 Firefighting
- 1.3 First Aid
- 1.4 Seamanship
- 1.5 General Safety
- 1.6 Confined Space Entry

2.0 STABILITY, BALLASTING, AND DECK OPERATIONS

- 2.1 Ballasting
- 2.2 Deck machinery – cranes
- 2.3 Dangerous substances (IMDG Code)
- 2.4 General Ship’s stability
- 2.5 General MOU stability

3.0 OFFSHORE OPERATIONS

- 3.1 Logbooks
- 3.2 Helicopter operations
- 3.3 Weather
- 3.4 Rig Construction
- 3.5 MARPOL
- 3.6 SOLAS
- 3.7 Communications – signaling (publication 102)

MOU MAINTENANCE SUPERVISOR AND ASSISTANT MAINTENANCE SUPERVISOR

1.0 MOTOR

- 1.1 2 and 4 Stroke Cycles
- 1.2 Scavenging, Supercharging and Exhaust Systems
- 1.3 Fuel Systems; Fuel Combustion Process
- 1.4 Lubrication Systems and Lubricating Oil Treatment
- 1.5 Cooling Water Systems and Treatment
- 1.6 Preparation for Starting, Starting Air and Reversing Systems; Speed Control, Maneuvering, and Emergency Running
- 1.7 Cylinder and Piston Construction
- 1.8 Exhaust and Inlet Valves
- 1.9 Bearings

- 1.10 Crankshafts and Alignment
- 1.11 Clutches, Gearing and Chain Drives
- 1.12 Camshafts and Valve Timing
- 1.13 Bedplate and Main Frame Construction
- 1.14 Scavenge Fires; Crankcase Mist Detection; Crankcase Explosions
- 1.15 Engine Condition Monitoring
- 1.16 General Overhaul and Maintenance

2.0 AUXILIARY POWER GENERATION

ELECTRICAL THEORY AND AC/DC MACHINERY

- 2.1 AC and DC Systems & Generators
- 2.2 Electric Motors
- 2.3 Emergency Diesel Systems & Emergency Power Battery Systems
- 2.4 Switchboards, Switchgear, Power Distribution & Lighting

3.0 AUXILIARY MACHINERY

- 3.1 Rig Propulsion Units
- 3.2 Compressed Air Systems
- 3.3 Refrigeration and Air Conditioning
- 3.4 Fresh Water Generators
- 3.5 Domestic Water Heating Systems
- 3.6 Pumps; Bilge and Ballast Systems; Deck Machinery
- 3.7 Boilers
- 3.8 Steam and Thermal Fluid
- 3.9 Operating Practices (Flashing Up, Raising Steam, Water Testing and Chemical Treatment etc.)
- 3.10 Safety Valves, Liquid Level Gauges and Monitors
- 3.11 Electronics and instrumentation
- 3.12 Automation, Instrumentation, and Control Systems
- 3.13 Rectifiers and Inverters

4.0 SAFETY AND ENGINEERING ADMINISTRATION

- 4.1 Pollution Avoidance and Control
- 4.2 Accident Avoidance, Health Hazards & First Aid
- 4.3 Rig Construction and Damage Control
- 4.4 Use of Lifesaving Appliances
- 4.5 Tools, Lifting Equipment, Workshop Machinery & Practice
- 4.6 Hot Work & Machinery Overhaul
- 4.7 Firefighting Equipment
- 4.8 Hazardous Areas Procedures & Approved Equipment
- 4.9 Engineering Drawings and Calculations

5.0 GENERAL ENGINEERING

- 5.1 Heat transfer in materials
- 5.2 Materials
- 5.3 Pressure, volume, and temperature relationships and calculations
- 5.4 Marshall Islands Maritime Regulations (open book)
- 5.5 General Engineering principles and theory
- 5.6 Algebraic and Geometric calculations
- 5.7 Construction
- 5.8 Tensions in machinery
- 5.9 Drawings
- 5.10 Air flow
- 5.11 Power calculations

III. EXAMINATION PROCEDURES

Examinations are administered on dates mutually agreed upon between candidates and the test center. Candidates will receive confirmation in writing as to the date and location arranged for examination.

The examinations are closed book; that is, candidates may not use books, notes, or other reference materials except for those supplied by the test center. Candidates may use non-programmable calculators and their own English language dictionaries. Electronic English language dictionaries will be checked prior to the exam to ensure they are not programmable. Candidates must bring their own navigation instruments (parallel rules, dividers, etc.).

Candidates may not communicate with each other during the examination. Any candidate who communicates with an unauthorized person, or uses unauthorized materials, will be dismissed from the examination and be considered to have failed the entire examination. Candidates failing under these circumstances will not be eligible for re-examination for a period of six months.

Candidates will normally be advised of their results within one (1) calendar month. Candidates must obtain 70% in each of the parts in order to pass the examination. Candidates failing one or more parts must arrange to be re-examined in the subject(s) failed, and obtain 70% in order to obtain certification. The candidate must wait 30 days between re-examinations. Figure 3 summarizes the re-examination procedure for both deck and engineer officers.

OFFSHORE INSTALLATION MANAGER (OIM), BARGE SUPERVISOR (BS)

The complete MOU deck officer's examination for OIM and BS consists of three (3) parts:

1. Offshore Operations;
2. Stability; and
3. Regulations, Safety, and Communications.

The examination will be administered on dates mutually agreed upon between the candidate and the test center. The full examination will take two (2) days. **Figure 1** gives the schedule of the MOU deck officers' examination.

BALLAST CONTROL OFFICER

The complete MOU deck officer's examination for BCO consists of three (3) parts:

1. General;
2. Stability, Ballasting, and Deck Operations; and
3. Offshore Operations.

MAINTENANCE SUPERVISOR AND ASSISTANT MAINTENANCE SUPERVISOR

The complete MOU engineer officer's examination consists of three parts:

1. diesel engines (parts 1 and 2)
2. auxiliary power plant and machinery (parts 1 and 2)
3. safety and engineering administration.

The full examination will take two (2) days. **Figure 2** gives the schedule of the MOU engineer officers' examination.

IV. THE MULTIPLE-CHOICE EXAMINATION FORMAT: GENERAL ADVICE

The examination format is multiple-choice. Each question has four (4) possible choices. The candidate must blacken the space on the answer sheet that corresponds to the letter of the answer he/she considers will best answer the question. A candidate's score is determined by the number of questions answered correctly compared to the number of questions in the examination part. All questions have the same value. Candidates are advised to answer each question as well as they can and not to spend too much time on any one question. Candidates not knowing the answer to a question should leave it blank and go on to the next question. If time is left after finishing the rest of the questions, the candidate can go back to the questions left blank and try to answer them.

FIGURE 1
TIME TABLE FOR OIM, BS, AND BCO EXAMINATION PAPERS

Candidates promptly report at 0830

DAY 1

0900 – 1200
OIM/BS - Offshore Operations
BCO - General

Time: 3 hours

1200 – 1300 - Lunch

1300 – 1600
OIM/BS – Stability
BCO – Stability, Ballasting, Deck
Operations

Time: 3 hours

DAY 2

0900 – 1200
OIM/BS – Regulations, Safety, Communications
BCO - Offshore Operations

Time: 3 hours

FIGURE 2
**TIME TABLE FOR MAINTENANCE SUPERVISOR AND ASSISTANT
MAINTENANCE SUPERVISOR OFFICERS' EXAMINATION PAPERS**

Candidates promptly report at 0830

DAY 1

0900 – 1200
Diesel Engines

Time: 3 hours

1200 – 1300 - Lunch

1300 – 1600
Diesel Engines

Time: 3 hours

DAY 2

0900 – 1200
Auxiliary Power Plant and Machinery

Time: 3 hours

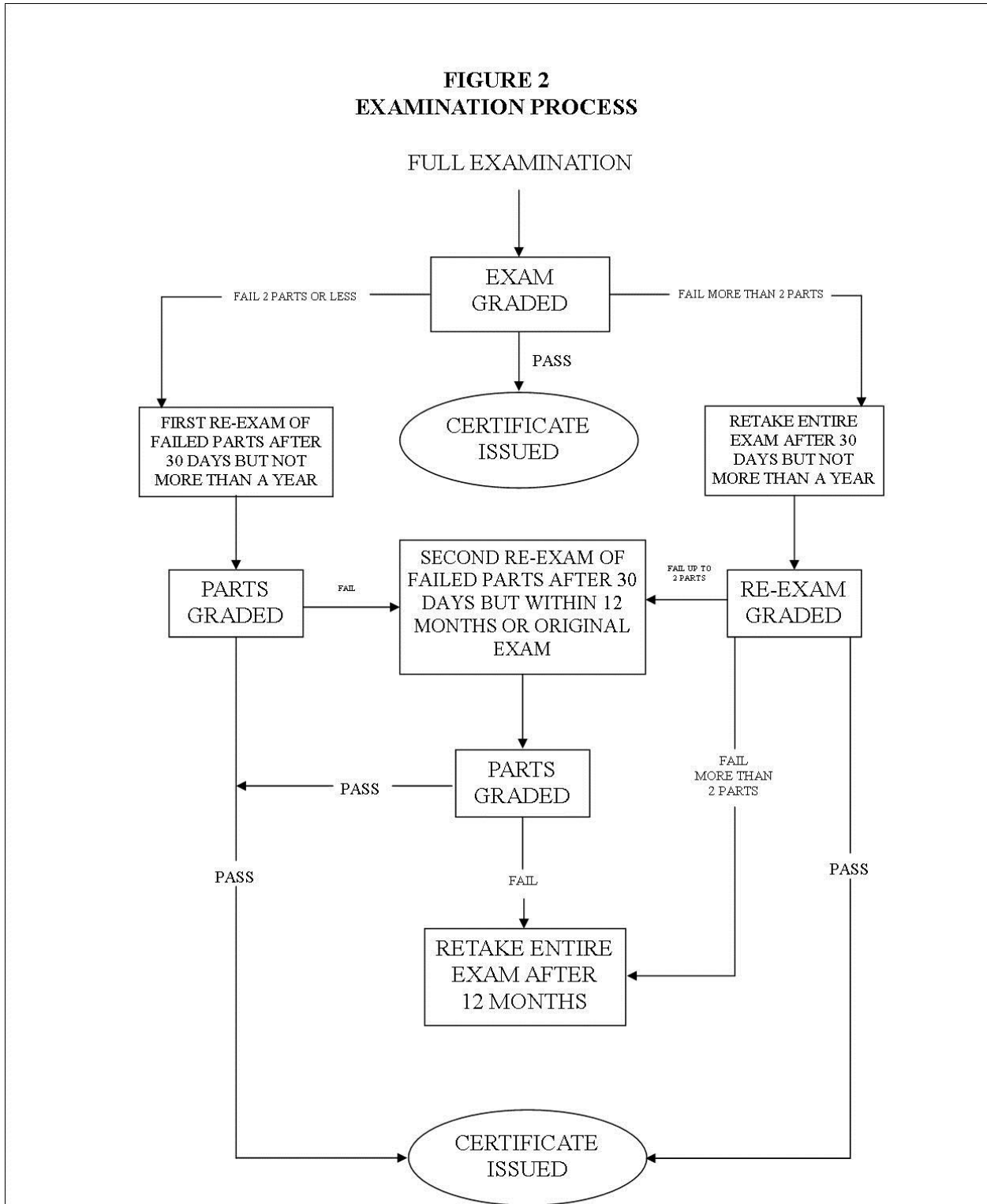
1200 – 1300 - Lunch

1300 – 1430
Auxiliary Power Plant and Machinery
Time: 1 ½ hours

1430 – 1500 - Break

1500 – 1700
Safety and Engineering Administration
Time: 2 hours

**FIGURE 3
RE-EXAMINATION PROCESS**



V. USING THE ANSWER SHEET

A specimen of the examination answer sheet is shown in Figure 4. The candidate must mark all answers the answer sheet provided. No credit will be given for anything marked in the examination booklet and nothing should be marked in the booklet. The candidate should not make any notes, calculations, or extra marks on the answer sheet. The candidate must NOT fold the answer sheet.

The answer spaces are lettered a, b, c and d to match the choices in the examination booklet. The candidate should use the No. 2 pencil to fill in the space marked with the letter corresponding to the letter of the answer that best answers the question. The candidate should be sure that the answer is filled in completely. **IF THE CANDIDATE CHANGES THE ANSWER, THE FIRST CHOICE MUST BE ERASED COMPLETELY AND THE NEW ANSWER MARKED.** No credit will be given for questions with more than one (1) answer marked.

EXAMINATION ANSWER SHEET



- Make clean erasures.
- Make NO stray marks.
- Do NOT fold.

Signature James Smith

Section Number 1 Grade of Examination Master-Modu

PRINT LAST (FAMILY) NAME

S	m	i	t	h
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PRINT FIRST (GIVEN) NAME

J	a	m	e	s
---	---	---	---	---

EXAM CENTER	EXAM NUMBER									
001	45678									
0	0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8	9
2	0	1	2	3	4	5	6	7	8	9
3	0	1	2	3	4	5	6	7	8	9
4	0	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	5	6	7	8	9
6	0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8	9
8	0	1	2	3	4	5	6	7	8	9
9	0	1	2	3	4	5	6	7	8	9

EXAM CENTER	EXAM NUMBER									
001	1234									
0	0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8	9
2	0	1	2	3	4	5	6	7	8	9
3	0	1	2	3	4	5	6	7	8	9
4	0	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	5	6	7	8	9
6	0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8	9
8	0	1	2	3	4	5	6	7	8	9
9	0	1	2	3	4	5	6	7	8	9

EXAM CENTER	EXAM NUMBER									
001	01									
0	0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8	9
2	0	1	2	3	4	5	6	7	8	9
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5	0	1	2	3	4	5	6	7	8	9
6	0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8	9
8	0	1	2	3	4	5	6	7	8	9
9	0	1	2	3	4	5	6	7	8	9

DATE		YEAR	
MONTH	DAY		
03	10	98	0
0	0	0	0
1	0	1	1
2	0	2	2
3	0	3	3
4	0	4	4
5	0	5	5
6	0	6	6
7	0	7	7
8	0	8	8
9	0	9	9

SECTION
0
1
2
3
4
5
6
7
8
9

CODE (RESERVED)									
1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0
1	0	1	1	1	1	1	1	1	1
2	0	2	2	2	2	2	2	2	2
3	0	3	3	3	3	3	3	3	3
4	0	4	4	4	4	4	4	4	4
5	0	5	5	5	5	5	5	5	5
6	0	6	6	6	6	6	6	6	6
7	0	7	7	7	7	7	7	7	7
8	0	8	8	8	8	8	8	8	8
9	0	9	9	9	9	9	9	9	9

1	0	0	0	21	0	0	0	41	0	0	0	0
2	0	0	0	22	0	0	0	42	0	0	0	0
3	0	0	0	23	0	0	0	43	0	0	0	0
4	0	0	0	24	0	0	0	44	0	0	0	0
5	0	0	0	25	0	0	0	45	0	0	0	0
6	0	0	0	26	0	0	0	46	0	0	0	0
7	0	0	0	27	0	0	0	47	0	0	0	0
8	0	0	0	28	0	0	0	48	0	0	0	0
9	0	0	0	29	0	0	0	49	0	0	0	0
10	0	0	0	30	0	0	0	50	0	0	0	0
11	0	0	0	31	0	0	0	51	0	0	0	0
12	0	0	0	32	0	0	0	52	0	0	0	0
13	0	0	0	33	0	0	0	53	0	0	0	0
14	0	0	0	34	0	0	0	54	0	0	0	0
15	0	0	0	35	0	0	0	55	0	0	0	0
16	0	0	0	36	0	0	0	56	0	0	0	0
17	0	0	0	37	0	0	0	57	0	0	0	0
18	0	0	0	38	0	0	0	58	0	0	0	0
19	0	0	0	39	0	0	0	59	0	0	0	0
20	0	0	0	40	0	0	0	60	0	0	0	0

VI. SAMPLE QUESTIONS AND ANSWER KEY

DECK

1.0 Regulations and Communications: Seamanship and Safety

- .1 What does the Republic of the Marshall Islands regard as evidence of a ship's seaworthiness?
 - a. A satisfactory report of the ship's annual inspection.
 - b. The ship's record of maintenance and repairs.
 - c. A drydocking within the last two years.
 - d. Current classification of the ship with a Republic of the Marshall Islands-recognized Classification Society.

- .2 Your rig is drilling within 200 miles of the coast. What do international pollution regulations require you to report to the coastal state?
 - a. Any spillage into the environment that contains an oily mixture.
 - b. Any routine discharges of oily mixtures.
 - c. Any spillage over 25 barrels.
 - d. Any discharge of mixtures with an oil content greater than 100 ppm.

- .3 Where should you use Standard Marine Navigational Vocabulary?
 - a. In ports and inland waterways.
 - b. In traffic separation schemes.
 - c. At sea, in port approaches, in waterways and harbors.
 - d. On high seas.

- .4 The whistle attached to a self contained breathing appliance will sound when the air bottle . . .
 - a. is about 1/3 full.
 - b. is empty.
 - c. is full.
 - d. contains air of insufficient oxygen concentration for breathing.

- .5 Before loading a 100 ton heavy lift, what precautions must be taken with respect to its stowage?
 - a. Check that the deck is well maintained and painted.
 - b. Make sure that the rig will be upright when the load is in its stowed position.
 - c. Make sure that the heavy lift will not be in contact with any other cargo.
 - d. Ensure that the landing area has been prepared with proper bearers to spread the load.

2.0 MOU Stability

- .1 For a semi-submersible to be in stable equilibrium, it is essential that . . .
 - a. G lies above M.
 - b. G lies below B.
 - c. G lies below M.
 - d. G coincides with M.

- .2 A rig of 22,000 tons displacement loads 50 tons of cargo on deck at a KG of 135' and 70' off centerline to port. If initial GM = 10' and KM = 71', and the rig was initially upright, what is the final list?
 - a. 11.8°
 - b. 7.6°
 - c. 10.6°
 - d. 7.8°

- .3 A rig trims about . . .
 - a. amidships.
 - b. the centroid of her summer load line waterplane.
 - c. the longitudinal center of floatation.
 - d. the longitudinal center of buoyancy.

- .4 A positive means of closure provided for all piping ventilation and accessways to preclude progressive flooding is called . . .
 - a. gastight.
 - b. weathertight.
 - c. watertight.
 - d. airtight.

- .5 The amount of watertight boundaries for any mobile offshore unit (MOU) is based on the
 - a. damage stability standard regulations used by classification and government authorities.
 - b. naval architects specifications.
 - c. owner's requirements.
 - d. operator's guidelines for safe operations.

3.0 MOU Offshore OPS

- .1 On watch in the North Atlantic, you sight a large amount of oil floating on the sea. Would you make a record of the fact?
 - a. Yes, in the Oil Record Book.
 - b. Yes, in the Control Room log book.
 - c. Yes, in the Drillers log book.
 - d. No, no record is required.

- .2 In storm conditions, the tensions in the windward cable legs increase beyond working tension. In order to reduce these tensions, what should you do?
 - a. Heave in cable in the leeward anchor cablelegs.
 - b. Pay out cable in the windward anchor cables.
 - c. Heave in cable in the windward anchor cablelegs.
 - d. Pay out cable in the leeward anchor cables.

- .3 Severe weather is forecast for a rig move in water less than 100' deep. What should you do?
 - a. Maintain course and ballast to a deeper draft.
 - b. Set course for deeper water, maintaining present draft.
 - c. Maintain course and trim the rig by the head.
 - d. Change the rig's heading to put the weather 30° on the bow.

- .4 What indicates that it is not safe to approach a helicopter?
 - a. Operation of the helicopter's main rotor.
 - b. Operation of the helicopter's anti-collision beacon.
 - c. The pilot making horizontal crossing motion with both arms.
 - d. The pilot making a horizontal motion with a red light.

- .5 Advection fog is formed when . . .
 - a. cold dry air moves in over cold water.
 - b. cold moist air moves in over warm water.
 - c. warm moist air moves in over cold water.
 - d. warm dry air moves in over warm water.

Answer Key

Section 1 - Regulations and Communications: Seamanship and Safety

- .1 d
- .2 a
- .3 c
- .4 a
- .5 d

Section 2 - Stability and Naval Architecture

- .1 c
- .2 c
- .3 c
- .4 c
- .5 a

Section 3 - MOU Off Shore OPS

- .1 b
- .2 d
- .3 b
- .4 b
- .5 c

ENGINEERING

1.0 MOU - Diesel Engines

- .1 If a 2 stroke engine is modified to operate with higher levels of supercharging, the exhaust valve or ports will be arranged to open earlier. Why?
 - a. To prevent overheating of components in the combustion chamber.
 - b. To provide more power for the supercharger.
 - c. To reduce the load on the top piston ring.
 - d. To provide a longer scavenging period.

- .2 Operating a diesel engine with the jacket cooling water temperature much above normal will...
 - a. reduce cylinder liner wear.
 - b. cause a severe risk of scale formation in the jackets.
 - c. reduce cylinder oil consumption.
 - d. reduce exhaust temperatures.

- .3 In a 4 stroke diesel engine, exhaust closing and inlet valve opening periods overlap, in order to...
 - a. ensure complete scavenging of the combustion space.
 - b. reduce peak loads on the camshaft drive.
 - c. prevent vacuum being formed in the combustion space.
 - d. provide pressure to assist closing of exhaust valves.

- .4 Increasing the diameter of a crosshead journal...
 - a. reduces the bearing load.
 - b. increases the quality of the lubricating oil film.
 - c. eliminates the necessity for oil grooves.
 - d. requires higher lubricating oil pressures.

- .5 The object of fitting reduction gearing between diesel engine and propeller shaft is to allow...
 - a. the engine to run at its most efficient speed.
 - b. the propeller to run at its most efficient speed.
 - c. both propeller and engine to run at their most efficient speed.
 - d. the main engine auxiliaries to run at a more economical speed.

2.0 MOU - Auxiliary Power Plant and Machinery

- .1 When two ac alternators are to run in parallel, the load is distributed by...
 - a. means of rheostats on each alternator.
 - b. changing excitation.
 - c. a balance coil.
 - d. adjusting the governor setting.

2. A step-down transformer has 120v in the primary, and the turns ratio is 6:1. What will the secondary output be?
 - a. 20v
 - b. 60v
 - c. 16v
 - d. 720v

3. The purpose of a thruster unit, duct or nozzle, is...
 - a. to protect the propeller in its exposed position.
 - b. to accelerate the wake and race and so gain additional forward thrust.
 - c. to serve as a rudder.
 - d. to permit larger propellers to be used.

4. A suction filter is fitted on an air compressor to...
 - a. strain the cooling water.
 - b. clean the air before compression.
 - c. remove water from the crankcase oil.
 - d. prevent dirt from entering the crankcase.

5. A low vacuum/flash off evaporator can produce fresh water using a source of waste heat. What is its other major advantage?
 - a. Scaling problems are minimal.
 - b. It requires no external energy supplies.
 - c. It can be used in rivers and harbors as well as at sea.
 - d. It produces water which is potable without further treatment.

3.0 MOU - Safety and Engineering Administration

- .1 Sewage disposal plants on a rig are designed to handle a sewage flow of...
 - a. 20 gallons/man/day.
 - b. 50 gallons/man/day.
 - c. 30 gallons/man/day.
 - d. 70 gallons/man/day.

- .2 What should you do if you find yourself in a smoke-filled corridor?
 - a. Take a deep breath, and run as fast as possible to an exit.
 - b. Get to the nearest cabin and wait there to be rescued.
 - c. Get down as low as possible and crawl towards the nearest exit.
 - d. Enter the nearest cabin, closing the door behind you and exit through the porthole.

- .3 Steel and iron tools left lying loose in stowed aluminum lifeboats can cause serious damage by
 - a. hitting fuel lines and causing leaks.
 - b. puncturing the hull.
 - c. corroding the plating, through the contact of the two different metals.
 - d. rolling around and holing water containers or buoyancy chambers.

- .4 If a medium carbon steel is heated above its transformation point, and then cooled rapidly, the metal will become...
 - a. more ductile.
 - b. easier to machine.
 - c. more brittle.
 - d. easier to weld.

5. What kind of conduit should be used for enclosing rubber cables that supply "flame proof" electrical equipment?
 - a. Solid drawn steel conduit.
 - b. Lap-welded seam steel conduit.
 - c. High impact plastic conduit.
 - d. Lap-welded seam steel conduit with PVC sheathing, sealed at all joints within the hazardous area.

Answer Key

1.0 - Diesel Engines

- .1 b
- .2 b
- .3 a
- .4 b
- .5 c

2.0 - Auxiliary Power Plant and Machinery

- .1 d
- .2 a
- .3 b
- .4 b
- .5 a

3.0 - Safety and Engineering Administration

- .1 c
- .2 c
- .3 c
- .4 c
- .5 a

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Note: These books may be obtained directly by mail order from good nautical bookstores and many chart agents. There are some additional sources which candidates may wish to use:

- IMO publications are seldom stocked abroad, and should be obtained directly from the International Maritime Organization, Publication Section, 4 Albert Embankment, London SE1 7SR, UK.
- ILO publications may be obtained through Unipub, P. O. Box 433, Murray Hill Station, New York, NY 10157, USA.
- British government publications may be obtained from the Government Bookshop, Her Majesty's Stationery Office, P. O. Box 569, London SE1 9NH, UK.
- American government publications may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402, USA.

Missions to seafarers, coast guard schools, and similar institutions frequently supply up-to-date, well-illustrated notes and booklets on all facets of the nautical profession, Candidates are encouraged to use all of these resources to obtain books which they personally find easy to read and understand. They should use only **CURRENT EDITIONS** and up-to-date materials.

The Administrator does not distribute books or recommend suppliers.

VIII. TABLE OF SI AND IMPERIAL UNITS AND CONVERSION FACTORS

PHYSICAL QUALITY	SI METRIC UNITS	IMPERIAL UNITS FT - LB - S	CONVERSION FACTORS
Length	meter (m)	foot (ft)	1 m = 3.281 ft.
Mass	kilogramme (kg)	pound (lb)	1 kg = 2.205 lb
Time	second (s)	second (s)	n/a
Temperature (interval)*	°C	°F	n/a
Specific Volume	m ³ /kg	ft ³ /lb	m ³ /kg = 16.02 ft ³ /lb
Force	newton (N)	poundal (pdl)	1 N = 7.233 pdl = .2248 lbf
Pressure	N/m ² or bar	poundal per square foot (pdl/ft ²)	1 bar = 10 ⁵ N/m ² = 14.5 lbf/in ²
Energy	joule (J) or kJ	foot poundal (ft pdl)	1 J = 1 Nm = 0.738 ft lbf
Rate of Energy Flow	watt (w) or kW	foot poundal per second (ft pdl/s)	1 W = 1 J/s = 0.739 ft lbf/s

*Note: Degrees Celsius (°C) will be used for examination purposes.

A poundal is the force required to accelerate 1 pound of mass to 1 foot per second per second.

$$1 \text{ pdl} = (1 \text{ lb} * 1 \text{ ft})/\text{s}^2$$

IX. EXAMINATION FEES

- i. Examination fees USD \$300
- ii. Each re-take of failed officer examination USD \$150

Remittances

- i. All fees remitted by check or money order must be in United States (US) dollars, drawn on a US bank or the US branch of an international bank and made payable to *The Trust Company of the Marshall Islands, Inc.*
- ii. Fees may also be paid online by credit card at <https://www.tcmi-inc.com/miPayments/>.
- iii. Candidates should send checks (**no cash**) with the application.
- iv. When not applying in person through a filing agent, the application with payment should be sent by **courier**.

ANNEX - PROCTOR GUIDE

Proctors for Marshall Islands examinations must ensure a secure examination room. To ensure security:

- the examinee cannot leave the examination room while an examination is being taken until they have completed a specific part, comfort calls must be made prior to the examination;
- examinees cannot speak to anyone but the proctor during the examination;
- examinees cannot use any material other than that supplied in the examination room and allowed by the Administrator for a given part of the examination; and
- examinees must turn in any electronic devices that are capable of communicating outside of the examination room, recording, or taking photographs (e.g. cellular telephones).

Examinees may bring the following personal items into the examination room to aid them:

- A non-programmable calculator
- Writing instruments
- Navigation plotting instruments
- Star finder

Proctors should ensure the following are made available to the examinee:

- Writing instruments
- Scratch Paper
- Appropriate publications (as required by exam type)
 - SOLAS
 - MARPOL
 - MI-108 Maritime Regulations (available at www.register-iri.com)
 - MI-107 Maritime Law (available at www.register-iri.com)
 - Reduction tables for Latitudes 15 to 45 degrees
 - Examination Administration Booklet (supplied by the Administrator)
- Critique sheet for each part of the examination
- Answer sheet for each part of the examination (must not write in booklet)

The duration of each part of the examination and the entire examination cannot exceed the scheduled time. Examinees may, however, take as many parts in one day as they can complete, taking less time overall to complete the entire examination.

At the end of each section the proctor must collect all scratch paper, the examination booklet, the critique sheet, and the answer sheet and return them to the Administrator for review and correction. The results will be sent to the facility proctoring the examination and to the sponsor for the examinee.

The Administrator has no objection to third party facilities that provide proctoring services for Marshall Islands examinations to recoup their expenses by charging examinees a fee not to exceed USD 150.00.