

REPUBLIC OF THE MARSHALL ISLANDS

MARITIME ADMINISTRATOR

GUIDELINES FOR DECK OFFICERS' EXAMINATIONS (MASTER, CHIEF MATE, OFFICER IN CHARGE OF A NAVIGATION WATCH OICNW)



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EXAM GUIDELINES (MI-319)
REVISION HISTORY

Rev	Date mm/yy	Description	Entered By	Entered mm/dd/yy
1	8/2/16	Moved §1.0 Applied Navigation to §2.0; Renumbered and change in title §1.0 Practical Navigation; Change in title §3.0 Rules and Regulations (Ships Business for Masters); Change in title §4.0 Trim, Stability and Cargo; and Change in title §6.0 Safety and Seamanship	M. Sparks	8/2/16

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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.

This booklet has been assembled to familiarize candidates for deck officers' examinations with the examination syllabus and format. It contains information on:

- a. the examination syllabus;
- b. 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;
- f. a table of SI and Imperial units and conversion factors; and
- g. English Language Proficiency Exam.

II. SYLLABUS

The following is a list of the main parts and the subsections of the examination syllabus. Each of the six (6) parts of the syllabus corresponds to an examination paper (e.g., 1.0 is Applied Navigation). Candidates' knowledge of each subsection will be tested. Second mate candidates will not be examined in sections marked by asterisks (*).

1.0 Practical Navigation

1.1 Nautical Astronomy

- .1 Definitions and Coordinate Systems
- .2 Principles and Time

1.2 Electronic Position Fixing Systems

- .1 GPS
- .2 DGPS
- .3 AIS
- .4 ECDIS
- .5 Integrated Systems
- .6 ARPA

1.3 Instruments

- .1 Magnetic and Gyro Compasses, Autopilots
- .2 Echo Sounders and Logs
- .3 Other Instruments (Sextant, Meteorological)

1.4 General Navigational Applications and Principles

- .1 Buoyage Systems
- .2 Publications
- .3 Passage Planning
- .4 Fixes
- .5 Compass correction
- .6 Charts
- .7 Navigational Aids
- .8 Instruments
- .9 Time

2.0 Applied Navigation

2.1 Chartwork

- .1 Chart Problems
- .2 Compass Error
- .3 Tidal Problems
- .4 Buoyage Systems
- .5 Navigational Publications; Passage Planning

2.2 Navigation problems

- .1 Plane and Parallel Sailing; Traverse Tables
- .2 Mercator Sailing
- .3 Great Circle and *Composite Great Circle Sailing
- .4 Correction of Altitudes
- .5 Meridian Altitudes and Time of Meridian Passage
- .6 Bodies Out of the Meridian: Intercept Method
- .7 Bodies Out of the Meridian: Longitude Method
- .8 Amplitude and Time Azimuth
- .9 Polaris; *Star Identification

3.0 Rules and Regulations (Ships Business for Masters)

3.1 The International Regulations for Preventing Collisions at Sea

3.2* The Maritime Act/Regulations

3.3* International Maritime Regulations and Ships' Operational Responsibilities

3.4* Ship's Business

3.5 SOLAS

3.6 MARPOL

4.0 Trim, Stability and Cargo

4.1 Stability and Naval Architecture

- .1 Hydrostatic Principles and Data
- .2 Form Coefficients and Changes of Form
- .3 Ship Construction
- .4 Immersion Factors
- .5 Density-Draft Relationship
- .6 Loadlines; Mean Draft
- .7 Trim
- .8 Stability at Small Angles of Heel, Including Effects of Turning and Wind Effect
- .9 Effects of Loading, Discharging, and Shifting Weights
- .10* Shear Force and Bending Moment

- .11* Electronic Loading Aids
- .12* The Inclining Experiment
- .13* The Trim and Stability Booklet
- .14* Miscellaneous Sources of Trim and Stability Guidance, Including Supplied Methods
- .15* Trials and Maneuvering Data
- .16* Stability at Large Angles of Heel
- .17 Metacentric Height
- .18* Damage Stability and Damage Control
- .19* Parallel Axes, Second Moment of Area
- .20* Dry Docking

4.2 Cargo Operations

- .1 Cargo Handling Equipment, Including Derricks, Cranes and Heavy Lift Derricks
- .2 Deck Machinery, Hatches and Hatch Covers
- .3 Cargo Stowage Principles
- .4* Preparation of Cargo Plans
- .5 Hold and Tank Preparation; Dunnaging and Separation; Ventilation and Sweat (hygrometry)
- .6 Tanker Practices
- .7 Dry Bulk Cargoes, Including Grain and Coal
- .8 Refrigerated and Unitized Cargoes
- .9 Deck Cargoes and Dangerous Goods

5.0 **Oceans, Winds, and Weather**

5.1 Applied Physical Science

- .1 Systems of Units; Conversions
- .2* Heat Transfer and Liquids
- .3* Applications of the Gas Laws
- .4 Reflection and Refraction of Light
- .5 Nature and Propagation of Sound Waves
- .6* Basic Electrical Concepts and Practical Circuitry Problems
- .7* Magnetism and Electromagnetism
- .8* Electrochemistry

5.2 Meteorology and Oceanography

- .1 Tides and Currents
- .2 The Atmosphere
- .3 Winds and Waves
- .4 Clouds and Precipitation
- .5 Ice
- .6 Visibility
- .7 Weather Systems, Including Tropical Revolving Storms

- .8 Synoptic Charts and Weather Forecasting
- .9 Oceanography and Climatology

6.0 Safety and Seamanship

6.1 Shiphandling

- .1* Shiphandling in Heavy Weather and Ice
- .2* Towing
- .3 Pilotage and Traffic Separation Schemes
- .4* Drydocking
- .5 Anchoring and Mooring
- .6 Distress Operations
- .7 General Seamanship

6.2 Safety

- .1 Safety Legislation and Reference Materials
- .2 Life Saving Appliances
- .3 Fire Prevention and Firefighting
- .4 Emergency Medical Care and Emergency Procedures
- .5 Enclosed space entry
- .6 Emergency escape
- .7 First responder principles
- .8 Power tool safety
- .9 Work permits and activities requiring permits

6.3 Communications

- .1 The International Code of Signals
- .2 The IMO Standard Marine Navigational Vocabulary
- .3 Radiotelephony
- .4 Ship Reporting and Safety Systems
- .5 Log and Record Keeping

6.4 Marine Engineering

- .1* Main Propulsion Machinery
- .2* Auxiliary Machinery

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 the examination. The written examination takes three (3) days. Figure 1 gives the schedule of the written examinations.

The examination is closed book; that is, candidates may not use books, notes, or other reference materials, other than those supplied at the test center. They may use non-programmable calculators and their own English language dictionaries if they wish. Candidates must bring their own navigation instruments (parallel rules, dividers, ruler, star finder, 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 will 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 (6) months.

Candidates will normally be advised of their results within one (1) calendar month. In all sections a passing grade will be considered to be 70% of the questions answered correctly in each part. Candidates not successful in up to two (2) parts must arrange to be re-examined in those parts and obtain a passing grade in order to receive certification. Candidates who are not successful in more than two (2) parts must retake the entire examination. Figure 2 summarizes the re-examination procedure.

Up to two (2) re-examinations may be taken. A candidate cannot be re-examined within 30 days of the first examination nor more than one (1) year from that date. The second re-examination will be determined from the first re-examination date and the same time frame applies. If the candidate is unsuccessful after two (2) attempts, the entire examination must be retaken but not within a year's time from the date of the last examination taken.

IV. THE MULTIPLE-CHOICE EXAMINATION FORMAT: GENERAL ADVICE

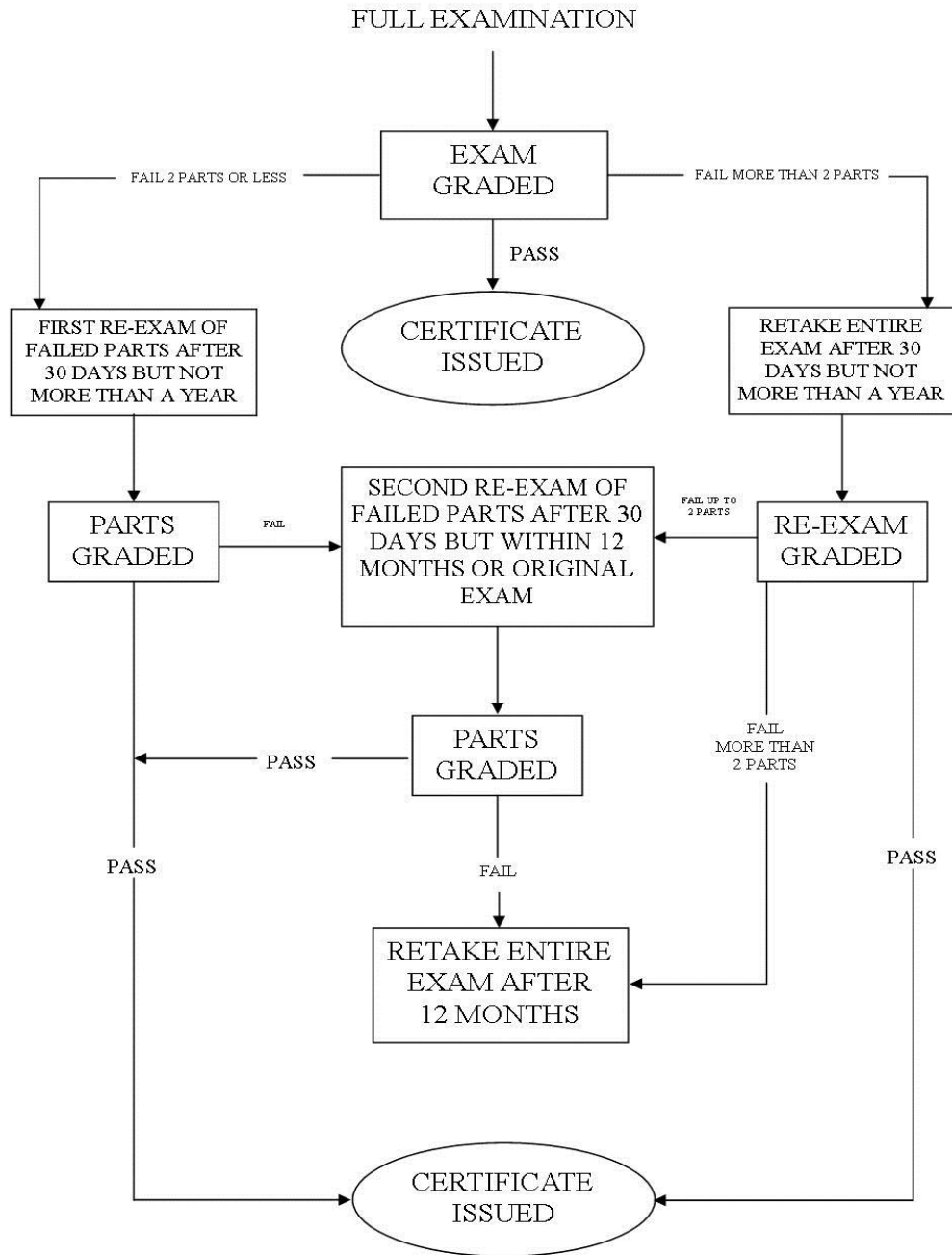
The examination format is multiple-choice. Each question has four (4) possible answers. The candidate must blacken the space on the answer sheet that corresponds to the letter of the answer that is considered to be the most appropriate. The candidate should note that there may appear to be more than one correct answer. There is not. Select the answer that fits into the parameters of the question in every case. A candidate's score is determined by the number of questions that are answered correctly, compared to the number of questions in that test 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 particular 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 then go back to the questions left blank to answer them.

FIGURE 1

TIME TABLE FOR DECK OFFICERS' WRITTEN EXAMINATION PAPERS

DAY 1	DAY 2	DAY 3
Candidates promptly report at 0830		
0900 - 1200 1.0 Applied Navigation Master/CM: 25 Q OICNW: 35 Q Time: 3 hrs.	0900 - 1200 3.0 Watchstanding, Rules and Regulations All ranks: 60 Q Time: 3 hrs	0900 - 1200 5.0 Oceans, Winds, and Weather All ranks: 35 Q Time: 3 hrs.
1200 - 1300 Lunch	1200 - 1300 Lunch	1200 - 1300 Lunch
1300 - 1600 2.0 Principles of Navigation Master/CM: 25 Q OICNW: 35 Q Time: 3 hrs.	1300 - 1600 4.0 Trim Stability, and Cargo Master/CM: 60 Q OICNW: 40 Q Time: 3 hrs	1300 - 1600 6.0 General Seamanship and Safety All ranks: 60 Q Time: 3 hrs.

**FIGURE 2
EXAMINATION PROCESS**



V. USING THE ANSWER SHEET

A specimen of the examination answer sheet is shown in Figure 3. The candidate must mark all answers on a sheet similar to this. No credit will be given for anything marked in the examination 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 answers in the examination booklet. The candidate should use a 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 circle 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 what would appear to have more than one answer marked.

USE NO. 2 PENCIL ONLY

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

EXAMINATION ANSWER SHEET

Signature James Smith

Section Number 1 Grade of Examination 3M

PRINT LAST (FAMILY) NAME

S	M	I	T	H					
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PRINT FIRST (GIVEN) NAME

J	A	M	E	S					
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EXAM CENTER

0	0	1							
1	2	3	4	5	6	7	8	9	0

EXAM NUMBER

0	0	4	5	6	7	8			
1	2	3	4	5	6	7	8	9	0

EXAM BOOK NUMBER

1	2	3	4	0	1				
0	1	2	3	4	5	6	7	8	9

DATE

MONTH	DAY	YEAR							
1	0	2	3	9	7				
0	1	2	3	4	5	6	7	8	9

SECTION

1									
0	1	2	3	4	5	6	7	8	9

CODE (RESERVED)

0	1	2	3	4	5	6	7	8	9

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

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VI. SAMPLE QUESTIONS WITH ANSWER KEY

1.0 Applied Navigation

- .1 At what time on the rising afternoon tide on 4 January will there be a height of tide of 11 feet at Mergui?
- 1728
 - 1837
 - 1802
 - 1901
- .2 Find the true altitude of the sun's center if, on the 15th of September, the sextant altitude of the lower limb is $35^{\circ} 18'.0$. IE is $2'.5$ off the arc. Height of eye is 12.6m.
- $35^{\circ} 23'.9$
 - $35^{\circ} 41'.1$
 - $35^{\circ} 28'.9$
 - $35^{\circ} 29'.1$
- .3 On 5 September during morning twilight, Polaris has a true altitude of $41^{\circ} 03'.0$ for an observer in DR $40^{\circ} 30'N, 40^{\circ} 15'W$. The chronometer showed 7h 02m 03s (2m 55s slow in GMT). Find the observer's latitude.
- $40^{\circ} 16'.7 N$
 - $40^{\circ} 16'.4 N$
 - $41^{\circ} 16'.7 N$
 - $41^{\circ} 16'.5 N$
- .4 In DR $48^{\circ} 00' N, 40^{\circ} 15' W$, an observation of the sun bearing $110^{\circ} T$ gave an intercept of $10'.8$ towards. If this observation had been computed by the longitude method, what longitude would have been obtained?
- $40^{\circ} 03'.5 W$
 - $39^{\circ} 57'.8 W$
 - $40^{\circ} 04'.2 W$
 - $39^{\circ} 58'.9 W$
- .5 What is the initial great circle course from $41^{\circ} 07' N, 125^{\circ} 10' W$ to $21^{\circ} 20' N, 157^{\circ} 15' W$?
- 304°
 - 236°
 - 272°
 - 226°

2.0 Principles of Navigation

- .1 The altitude of a heavenly body is measured in which system of coordinates?
 - a. The terrestrial system.
 - b. The equatorial system.
 - c. The celestial system.
 - d. The horizon system.

- .2 The effect of atmospheric refraction on the observed height of a body at a very low (normally less than 10°) altitude is such that additional corrections for temperature need to be applied to the sextant altitude for
 - a. the sun.
 - b. the sun and moon.
 - c. the sun, moon, and planets.
 - d. the all bodies.

- .3 What is the difference between the DGPS and the GPS?
 - a. The DGPS is more accurate than the GPS.
 - b. The accuracy of the DGPS can be less than 10 meters.
 - c. The DGPS uses a shore based transmitter.
 - d. All of the above.

- .4 Your vessel is heading east by compass. If the vertical component of the ship's magnetism is not fully compensated for by the heeling error magnets, and there exists a residual blue pole below the compass, what would be the effect at the compass position when the vessel is heeled to starboard?
 - a. Reduced directive force.
 - b. Easterly deviation.
 - c. Increased directive force.
 - d. Westerly deviation.

- .5 The data from the voyage data recorder (VDR) can be retrieved and used for:
 - a. Port State inspections.
 - b. Flag State inspections.
 - c. Accident investigations.
 - d. SIRE (Ship Inspection Report) inspections.

3.0 Watchstanding, Rules and Regulations

- .1 A minesweeper engaged in sweeping, in addition to the lights prescribed for a power-driven vessel, exhibits
 - a. three all-round green lights - one on the foremast head and one on each end of the foreyard.
 - b. three all-round yellow lights - one on the foremast head and one on each end of the foreyard.
 - c. three all-round lights in a vertical line, the top and bottom white and the middle one red, displayed in place of the masthead lights.
 - d. one green all-round light, placed well forward in the vessel.

- .2 You see the masthead light and both sidelights of a small power driven vessel 45° on your starboard bow, 4 miles distant. You should
 - a. slow down.
 - b. alter course to port.
 - c. alter course to starboard.
 - d. keep your course and speed.

- .3 The operation of Republic of the Marshall Islands (RMI) registered vessels is governed at all times and places by
 - a. the national law of the Master and crew.
 - b. the RMI Maritime Act.
 - c. the American General Maritime Law.
 - d. the law of the port country, if the ship is in port, and the RMI Maritime Act when the ship is in international waters.

- .4 The term "height above the hull" means the height above
 - a. the uppermost continuous deck.
 - b. the main deck.
 - c. the summer load line.
 - d. the highest water-tight deck.

- .5 How often should the line throwing equipment be demonstrated to the crew on an RMI registered ship?
 - a. Every three months.
 - b. Every voyage.
 - c. Monthly.
 - d. Weekly.

4.0 Trim Stability and Cargo

- .1 Your vessel's deadweight capacity at load displacement is 12,500 tonnes. Fuel, water and stores total 2,000 tonnes. If the vessel has a usable cubic capacity of 60,000 m³, what stowage factor will bring her down to her marks?
 - a. 41.4 m³
 - b. 48 m³
 - c. 57.1 m³
 - d. 51.4 m³

- .2 If a liquid chemical cargo is liable to polymerise during carriage, what treatment does it normally receive?
 - a. It is continuously recirculated during the voyage.
 - b. It is kept at a temperature above 38°C.
 - c. An inhibitor is added to it.
 - d. It is loaded at 10° - 15°C and carried in insulated tanks.

- .3 In the cross curve of stability shown, what number indicates the maximum righting arm?
 - a. 4
 - b. 1
 - c. 2
 - d. 3

- .4 You are loading a full cargo of packaged timber. What stability calculations must you make?
 - a. The GZ for sailing and arrival conditions.
 - b. The GM for the sailing and arrival conditions.
 - c. The GM for the arrival condition, allowing for possible water absorption by the cargo.
 - d. A full stability condition, showing the minimum stability criteria which will be maintained throughout the voyage.

- .5 You are planning the loading of a ro-ro. Where should you locate vehicles containing hanging loads (such as chilled meat)?
 - a. Along the sides of the vehicle decks.
 - b. Amidships and inboard, on the lower vehicle deck.
 - c. On the upper vehicle deck, at the ends of the ship.
 - d. Distributed evenly among the other vehicles.

5.0 Science, Weather and Oceans

- .1 An anemometer on board a vessel steering 360° T at 20 kts records a 20 kt wind from the direction of the port beam. What is the approximate true wind speed and direction?
 - a. 28 kts, SW
 - b. 28 kts, NW
 - c. 20 kts, W
 - d. 14 kts, NW

- .2 You are in 35° S. A cyclonic storm is nearby. The wind is NNW. What is the direction of the storm center?
 - a. SW
 - b. SSE
 - c. E
 - d. W

- .3 How long can a main propulsion diesel engine be kept on instant “stand by”?
 - a. 12 hours, depending on the total power.
 - b. 3 hours, maximum.
 - c. Indefinitely.
 - d. 24 hours, depending on the total power.

- .4 When a tide in a channel is described as behaving like a progressive wave, the maximum flood velocity will occur about the time of
 - a. mean level on the falling tide.
 - b. low water.
 - c. mean level on the rising tide.
 - d. high water.

- .5 What metal is often found aboard ship in the form of a thin coating, designed to protect metal fittings from corrosion?
 - a. Muntz metal.
 - b. Tin.
 - c. Chrome.
 - d. Zinc.

6.0 General Seamanship and Safety

- .1 What type of light is attached to the life ring buoys on a tanker?
 - a. A light powered by two D cells.
 - b. A chemically-powered light, such as a cyalume stick.
 - c. A light powered by a NIFE battery.
 - d. A light powered by a seawater-activated battery.

- .2 How would the time 1850 GMT be expressed, using international code flags?
 - a. 1850Z
 - b. T1850
 - c. 1850T
 - d. Z1850

- .3 What knots would you use to secure a bosun's chair?
 - a. A stage hitch and a lowering hitch.
 - b. A double sheet bend and a lowering hitch.
 - c. A clove hitch and two round turns.
 - d. A sheet bend and two half-hitches.

- .4 What is the best search pattern for a single ship to employ if the datum of the target is not known within close limits?
 - a. Expanding square.
 - b. Sector.
 - c. Parallel track.
 - d. Spiral.

- .5 What is(are) the most pronounced effect(s) of hydrodynamic interaction between vessels?
 - a. Increased squat.
 - b. Sinkage and change of trim.
 - c. Increased drag.
 - d. Decreased rudder effectiveness.

Answer Key

Section 1 - Applied Navigation

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

Section 2 - Principles of Navigation

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

Section 3 - Watchstanding, Rules and Regulations

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

Section 4 – Trim Stability and Cargo

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

Section 5 - Science, Weather and Oceans

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

Section 6 - General Seamanship and Safety

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

VII. BIBLIOGRAPHY AND SUPPLIERS

Marshall Islands Maritime and Corporate Administrators, Inc. does not distribute books or recommend suppliers.

When purchasing books, candidates are advised to buy only the latest printings and editions. Books marked with an asterisk are additional texts, more suitable for chief mate and master candidates.

Able Seaman and Lifeboatman Preparation Course. Maritime Education Textbooks.

Accident Prevention on Board Ship at Sea and In Port. Geneva: International Labor Office, CH-1211, Geneva 22, Switzerland.

Blank, John S. Modern Towing. Centreville, MD: Cornell Maritime Press.

*Bole, A.G., and Jones, K.D. Automatic Radar Plotting Aids Manual. A Mariner's Guide to the Use of ARPA. Centreville, MD: Cornell Maritime Press, Inc., P.O. Box 456, 306 East Water Street, Centreville, MD 21617, USA.

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Burger, W. Radar Observer's Handbook for Merchant Navy Officers. Glasgow: Brown, Son & Ferguson, Ltd., 4-10 Darnley Street, Glasgow G41 2SD, Scotland.

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Danton, G.L. The Theory and Practice of Seamanship. London: Routledge, Kegan Paul, Broadway House, 68-74 Carter Lane, London EC4, UK.

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The Republic of the Marshall Islands Maritime Act, Regulations, Notices, Guidelines and Requirements on website at www.register-iri.com.

Self Study Course in Ship's Stability. New York: National Cargo Bureau, Inc., 30 Vesey Street, New York, NY 1007-2914, USA.

Sonneberg, G.J. Radar and Electronic Navigation. Borough Green: Butterworth & Co. (Publishers) Ltd., Borough Green, Sevenoaks, Kent TN15 8PH, UK.

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The Ships Medicine Chest and Medical Aid at Sea. U.S. Department of Health and Human Service.

Van Wyck, Samuel M. and Carpenter, Max H. The Radar Book. Centreville, MD: Cornell Maritime Press, Inc.

Wallerton, P.F. Basic Shiphandling for Masters, Mates & Pilots. London: Stanford Maritime Press.

Wiley, J & Sons. General Chemistry - Principals & Structure.

NOTE: These books may be obtained directly or 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 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.

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 conversion*	°C	°K	°C - 273
Specific Volume	m ³ /kg	ft ³ /lb	1 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 = 0.738ft lbf
Rate of Energy Flow	watt (W) or kW	foot poundal per second (ft pdl/s)	1 W = 1 J/s = 0.738 ft lbf/s

*Note: Degrees Celsius (°C) or degrees Kelvin (°K) 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.

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

IX. ENGLISH LANGUAGE PROFICIENCY EXAMINATION

Examinations may only be taken in English. Therefore, no English proficiency examination will be required.

X. SAMPLE QUESTION WITH ANSWER KEY

1.0 English Language

1. A falling barometer indicates an approaching _____ pressure system.
 - a. stationary
 - b. low
 - c. high
 - d. cold

2. The _____ of a chart indicates its suitability for coastwise use.
 - a. size
 - b. scale
 - c. color
 - d. dimensions

3. Information about a port and its approaches can be found in _____.
 - a. a dictionary.
 - b. the sailing directions.
 - c. an encyclopedia.
 - d. the Tide Tables.

4. Indicate the past tense of the sentence: The vessel _____ the port of Norfolk at 1600.
 - a. will leave
 - b. left
 - c. is leaving
 - d. will arrive at

5. I walked forward to the _____.
 - a. stern.
 - b. rudder.
 - c. bow.
 - d. port side.

2.0 ORAL QUESTIONS

1. The pilot will board at 0500. What time will the pilot board?
 - a. 0500
 - b. 1500
 - c. 0300
 - d. 0050

2. The rudder command “starboard ten degrees” indicates that you should turn the wheel to the
 - a. right 10.
 - b. left 10.
 - c. right 20.
 - d. right 30.

3. The pilot says to put the engine “half ahead.” Pick the proper setting.
 - a. Full ahead.
 - b. Half ahead.
 - c. Slow ahead.
 - d. Dead slow ahead.

4. When referring to time, fifteen hundred hours is
 - a. 1500.
 - b. 0500.
 - c. 0300.
 - d. 1300.

5. What does above mean?
 - a. Over.
 - b. Under.
 - c. Alongside.
 - d. Around.

Answer Key

1.0 English Language

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

2.0 Oral Questions

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

XI. 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.