

Object

2. These Regulations prescribed the subject matter of the various examinations a person must pass as part of the qualification he must have before—

- (a) he can be issued with a certificate of competency as a deck officer; or
- (b) his sailing licence can be endorsed with a sailing endorsement.

Regulations to be read as one

3.—(1) These Regulations are to be read as one with the Marine (Certificate of Competency and Manning of Vessels) (General) Regulations, 1989, and the other Regulations referred to in those Regulations.

(2) In particular words and phrases defined in the Marine (Certificates of Competency and Manning of Vessels) (General) Regulations, 1989 have the same meaning when used in these Regulations.

Form of examination

4.—(1) An examination for a qualification leading to a master's grade of Certificate of Competency shall take the form of an examiner asking the examinee questions orally and the examinee giving either oral answers or, in some cases, a practical demonstration of his ability.

(2) An examination for a qualification leading to a mate's grade of certificate of competency shall take the form of—

- (a) an examiner asking the examinee questions in writing and the examinee giving written answers either verbally or by chartwork (and in the case of an examination including chartwork may include oral questions and answers);
- (b) an examiner asking the examinee questions orally and the examinee giving either oral answers or, in some cases, a practical demonstration of his ability; and
- (c) except in respect of a Grade 5 (Mate) certificate of competency—a practical test during which the examiner requires the examinee to demonstrate an appropriate knowledge of signals and signalling equipment.

(3) An examination for a qualification leading to a sailing licence shall take the form of—

- (a) an examiner accompanying the examinee during a voyage carried out in an appropriate vessel during which the examiner requires the examinee to demonstrate appropriate skills in boathandling and a knowledge of seamanship; and
- (b) an examiner accompanying the examinee during a voyage carried out in an appropriate vessel during which the examiner requires the examinee to demonstrate appropriate skills in boathandling and a knowledge of seamanship; and
- (c) in the case of an examination leading to a qualification for a sailing licence (seagoing service)—an examiner asking the examinee questions in writing and the examinee giving written answers.

Written examinations

5.—(1) Subject to subregulation (5), the subjects to be covered in the written part of an examination leading to a qualification for a mate's grade of certificate of com-

- 13. Slings a stage, rigging a bosun chair.
- 14. Knowledge of—
 - (a) rigging a derrick;
 - (b) driving a winch;
 - (c) the use and operation of a windlass in anchor work;
 - (d) precautions to be taken in the stowage of chain and securing the anchors for sea.
- 15. A knowledge of the gear used in cargo work and an understanding of its uses and its general maintenance with particular reference to wires, blocks and shackles.
- 16. The safe handling of hatch covers, battening down and securing hatches.
- 17. The use of purchases and tackles and its mechanical advantages.
- 18. A knowledge of—
 - (a) rope construction and types being—
 - (i) natural fibre;
 - (ii) synthetic fibre;
 - (iii) wire rope; and
 - (b) rope coiling, maintenance, storage and its uses.
- 19. Flags: Knowledge of flags commonly used aboard ship.

[LEGAL NOTICE NO. 12]

MARINE ACT, 1986
(ACT NO. 35 OF 1986)

MARINE (CERTIFICATES OF COMPETENCY (EXAMINATION SYLLABUSES) (DECK OFFICERS)) REGULATIONS, 1989

In exercise of the powers conferred upon me by sections 98, 99, 143 and 212 of the Marine Act, 1986, I have made the following Regulations—

Short title

1. These regulations may be cited as the Marine (Certificates of Competency (Examination Syllabuses) (Deck Officers)) Regulations, 1989.

petency or a sailing licence (seagoing service) are those set out against that grade of certificate or licence in column 3 of Part 1 of Schedule 1.

(2) Each subject referred to in subregulation (1) is to be the subject of a separate examination.

(3) An examinee shall be allowed the period specified in column of Part 1 of Schedule in which to undertake an examination specified in column 3.

(4) The syllabus for each examination referred to in subregulation (2) is specified under the name of that examination in Part 1 of Schedule 2.

(5) Unless, for good reason, the Marine Board considers a candidate's knowledge to be deficient in the following subjects, a candidate who holds a Grade 2 (Mate) certificate of competency (or its equivalent as recognised by the Marine Board) shall not be required to undertake examinations in meteorology, currents and routing, and electrography when sitting for the examination leading to a qualification for a Grade 1 (Mate) certificate of competency.

Oral and practical examinations

6.—(1) The subjects to be covered in the oral and practical part of an examination leading to a qualification for a grade of certificate of competency of a deck officer or a grade of sailing licence are those set out against that grade of certificate or licence in column 3 of Part 1 of Schedule 1.

(2) Each subject referred to in subregulation (1) is the subject of a separate examination.

(3) The syllabus for each examination referred to in subregulation (2) is specified under the name of that examination in Part 2 of Schedule 2.

(4) Where the syllabus for an oral examination leading to a qualification for a mate's grade of certificate of competency covers the same subject as the syllabus for an oral examination leading to a qualification for a master's grade of certificate of competency an examinee in respect of the master's grade of certificate of competency will be required to demonstrate a higher degree of knowledge of those subjects.

Signals examination

7.—(1) The syllabus for the signals part of an examination leading to a qualification for a mate's grade of certificate of competency is specified under the name of that examination in Part 3 of Schedule 2.

(2) Unless, for good reasons, the Marine Board considers a candidate's knowledge to be deficient in the subject, a candidate who holds a Grade 2 (Mate) certificate of competency (or its equivalent as recognised by the Marine Board) shall not be required to undertake the signals examination when sitting for the examination leading to a qualification for a Grade 1 (Mate) certificate of competency.

Sailing endorsement

8. The examination leading to the endorsement on a sailing licence of a sailing endorsement shall consist of—

(a) an oral examination during which the examiner will ask the examinee questions on—

(i) the Collision Regulations, particularly with reference to vessels under sail (whether or not under power);

(ii) the English names of parts of sails;

(iii) standing and running rigging;

(iv) nautical terms used in tacking and jibbing;

(v) use of lifelines and safety harnesses;

(vi) organisation of crew into manouvering stations;

(vii) reefing at sea;

(viii) choice of sails.

(ix) heaving to under sail;

(x) use of sea anchor in heavy weather; and

(ix) the action for picking up a man-overboard while the vessel is under sail,

to which the examinee will be required to give oral answers; and

(b) a voyage under sail, in an appropriate vessel during which the examinee will be required to demonstrate to the examiner—

(i) the examinee's skill in, and ability to communicate orders for—

(A) tacking,

(B) jibbing,

(C) reefing;

(D) changing sails;

(E) heaving to;

(F) picking up a man overboard while the vessel is under sail; and

(G) berthing the vessel while under sail; and

(ii) the examinee's ability to instruct passengers in safety drills.

Dated this third day of May 1989.

A. V. TORA
Minister for Communications,
Works and Transport

SCHEDULE I
PART I
WRITTEN EXAMINATION SUBJECTS

Column 1 Item	Column 2 Grade of Certificate of Competency	Column 3 Subjects	Column 4 Duration of Examination
1	Grade 1 (Mate)	Business and law Navigation Ship construction and stability Engineering and control systems Navigational aids and instruments Meteorology, currents and routing Electrotechnology	3 hours 2½ hours 3 hours 2½ hours 3 hours 2 hours 2 hours
2	Grade 2 (Mate)	Navigation and chartwork Meteorology, currents and routing Ship construction and stability Electrotechnology Compasses and navigational aids Shipmaster's business	3 hours 2 hours 3 hours 2 hours 3 hours 2 hours
3	Grade 3 (Mate)	Navigation Chartwork and pilotage Ship construction and stability Ship operation Meteorology Principles of navigation	3 hours 2 hours 3 hours 2 hours 2 hours 2 hours
4	Grade 4 (Mate)	General ship knowledge Chartwork and pilotage Practical navigation Meteorology	3 hours 2 hours 1½ hours 2 hours
5	Grade 5 (Mate)	Chartwork and practical navigation General ship knowledge	3 hours 2 hours
6	Sailing Licence (Seagoing Service)	Chartwork and Pilotage	2 hours

PART 2
ORAL AND PRACTICAL EXAMINATION SUBJECTS

Column 1 Item	Column 2 Grade of Certificate of Competency	Column 2 Subjects
1	Grade 1 (Master)	The duties and responsibilities of the master of a vessel of any tonnage in the unlimited, Pacific region or Fiji islands trade.
2	Grade 1 (Mate)	The duties and responsibilities of the Chief Mate of a vessel of any tonnage in the unlimited, Pacific Region or Fiji Islands Trade.
3	Grade 2 (Master)	The duties and responsibilities of— (i) the master of a vessel up to 1600 gross tonnage in the unlimited trade; and (ii) the master of a vessel of any tonnage in the Pacific region trade.
4	Grade 2 (Mate)	The duties and responsibilities of— (i) the Chief Mate of a vessel of up to 1600 gross tonnage in the unlimited trade; and (ii) the Chief Mate of a vessel of any tonnage in the Pacific region trade.
5	Grade 3 (Master)	The duties and responsibilities of the master of a vessel of up to 1600 gross tonnage in the Pacific region or Fiji islands trade.
6	Grade 3 (Mate)	The duties and responsibilities of— (i) the Chief Mate of a vessel of up to 1600 gross tonnage in the Pacific region or Fiji islands trade; and (ii) a watchkeeping office of a vessel of any tonnage in the unlimited, Pacific region and Fiji islands trade
7	Grade 4 (Master)	The duties and responsibilities of the master of a vessel of less than 1000 gross tonnage in the Fiji islands trade

Column 1 Item	Column 2 Grade of Certificate of Competency	Column 2 Subjects
8	Grade 4 (Mate)	The duties and responsibilities of— (i) the Chief Mate of a vessel of less than 1000 gross tonnage in the Fiji islands trade; and (ii) a watchkeeping officer of a vessel of any tonnage in the Pacific region or Fiji islands trade.
9	Grade 5 (Master)	The duties and responsibilities of the master of a vessel of less than 200 gross tonnage in the Fiji islands trade.
10	Grade 5 (Mate)	(a) The duties and responsibilities of— (i) a mate; and (ii) a watchkeeping officer, in a vessel of less than 200 gross tonnage in the Fiji islands trade. (b) Meteorology
11	Sailing Licence (Harbour and River Craft)	Boat handling in harbours and rivers (oral) Boat handling in harbours and rivers (practical)
12	Sailing Licence (Short Coasting Services)	Boat handling in Fiji coastal waters (oral) Boat handling in Fiji coastal waters (practical)
13	Sailing Licence (Seagoing Service)	Boat handling in open seas (Oral) Boat handling in open seas (practical)

Reg. 5(2)

SCHEDULE 2
PART 1
SYLLABUSES FOR WRITTEN EXAMINATIONS
(DECK OFFICERS)

Grade 1 (Mate)—Business and Law examination

Note *The legal knowledge required will not go beyond an understanding of the national law and international requirements applicable to shipping and the mercantile law which a shipmaster must know in order to conduct the business of a ship.*

- (a) Registration of vessels. The registration certificate and its legal significance.

- (b) Certificates and other documents or publications required to be carried aboard vessels, their use, how they are obtained, and (if appropriate) the period of their validity.
- (c) Engagement, discharge and management of crews. Manning scales and certificate. Contracts of employment, wages and other remuneration allotments. Deceased seamen, engagement of substitutes, repatriation.
- (d) The Official Log Book and national law relating to entries. Offences relating to misconduct, to endangering vessel and against persons on board. Discipline, and treatment of disciplinary offences. Civil liability for certain offences.
- (e) Custom house procedure, entering and clearing vessel. Function of vessel's agents.
- (f) Loadline marks, calculations involving their use. Entries and reports in respect of freeboard, draught and allowances.
- (g) The safety of the vessel, crew and passengers. Assistance of vessels in distress. Duties in the case of stranding, collision or other casualty. Towage and salvage.
- (h) The law relating to navigation, including the prevention of collision, the reporting of dangers to navigation, and marine casualties compulsory on non-compulsory pilotage.
- (i) A general knowledge of shipping practice and documents with particular reference to charter parties, bills of lading, and waybills. An understanding of the main clauses in a contract of affreightment. Lay days, demurrage and despatch (including calculations). The law relating to the carriage of cargo, and the shipowner's liabilities and responsibilities. Protests, cargo surveys, certificates of seaworthiness.
- (j) An outline knowledge of the expressed and implied conditions and statutory terms contained in a contract of marine insurance. Particular average, general average. Procedure at a port of refuge. Lloyd's agents.
- (k) A background knowledge international organizations concerned with shipping.

Grade 1 (Mate)—Navigation examination

Note 1 *Questions may be asked on any aspect of navigation covered in the lower grades, including matters pertinent to navigation covered in other subjects. Candidates will be required to show a full understanding of the techniques involved and must be able fully to relate the various aspects one to another, and to show their ability to make full use of all the navigational and meteorological information which is available to a ship's Master, including his own observations.*

Note 2 *The form of the paper will vary from examination to examination. As examples, it may consist of one question only, such as a radar plot or an exercise in position finding; or several questions covering different aspects of navigation and related subjects.*

The following syllabus is to be read in the light of these notes:

- (a) Voyage planning. The selection of ocean routes. Shore-based weather routing and self-routing.
- (b) Planning and executing a coastal passage. Approaching the coast. Approaching and entering harbour.
- (c) Navigation in pilotage waters, whether with or without a pilot on board.
- (d) Approaching and passing through traffic separation schemes and adjacent areas.
- (e) The optimum course and speed for 2 vessels wishing to rendezvous for any purpose.
- (f) Search and rescue procedures.
- (g) Navigational procedures when approaching off-shore installations, and when working with helicopters or small craft.
- (h) Navigational in extreme weather conditions.
- (i) Bridge procedures at sea, in harbour, and whilst berthing or anchoring.
- (j) The interpretation and use of navigational and meteorological information.
- (k) The interpretation and use of information from navigational aids, including the use of radar in collision avoidance.
- (l) The effects of systematic and random errors in position fixing by any method.
- (m) Advantages and disadvantages of various navigation systems and methods; considerations underlying the choice of navigational systems for differing trades and geographical regions.

Grade 1 (Mate)—Ship Construction and Stability Examination

- (a) Types of vessels. General ideas on strength and construction in relation to particular trades, including specialised carriers.
The use of special steels, aluminium and fire resistant materials in ship construction.
Principles of damage control. Arrangement for restricting the spread of fire in superstructures.
- (b) A working knowledge of—
 - (i) classification of ships; periodic surveys for retention of class; tonnage certificates and their purpose;
 - (ii) requirements of national regulations concerning load lines, conditions of validity of certificate, an understanding of those aspects of the conditions of assignment which affect the stability and seaworthiness of a ship; and
 - (iii) national regulations in respect of construction of vessels under those regulations.
- (c) Permeability of a compartment. The effect of bilging and flooding (end or midships' compartment, on or off the centre-line).

- (d) A more comprehensive knowledge of stability than is required for the Grade 2 (Mate)—Ship Construction and Stability examination and in addition: stability to moderate and large angles of heel; assessment of dynamical stability from GZ curve; angle of loll; shifting or adding weights with zero GM; effect of wind and wave excitation.
- (e) Ship stability at sea. Dangers to a ship with a heavy list. Precautions when righting. Deck cargoes, homogeneous cargo liable to shift. Ballasting for stability consideration. The effect of beam and freeboard on stability.
- (f) The inclining experiment. A comprehensive knowledge of the hydrostatic, stability and stress data supplied to ships.
- (g) Shallow water effect. Ship to ship and ship to shore interaction. The turning circle. Angle to heel when turning; effect on stability.
- (h) A more detailed knowledge than is required for the Grade 2 (Mate)—Ship Construction and Stability examination of bending stresses in the ballast and loaded conditions at sea. Torsional stress.

Grade 1 (Mate)—Engineering and Control Systems examination

- (a) The meaning of marine engineering terms in common use.
- (b) A general knowledge of diesel and turbine machinery, marine boilers, generators, pumps, condensers and evaporators. Transmission of main engine power. Steering systems. Manoeuvring procedures.
- (c) Fuel consumption and economical speeds; relationship between power, speed, displacement and consumption, estimated consumption to complete a passage. Problems involving pitch and slip.
- (d) An understanding of marine application of the properties of gases. Systems for the carriage of refrigerated cargoes and of liquefied gases.
- (e) General principles of remote control systems. Types of controller and the methods used in connection with pneumatic, electric and hydraulic control systems for main engine, pumps and valves. Information systems and displays; data logging, associated alarm and fail safe systems. Bridge control of main engines. Bow thrust units and other manoeuvring aids not covered in the Grade 1 (Mate)—Navigational Aids and Instruments examination. Tank and draught gauges. Stabilizers.
- (f) Fire detection and extinction systems and procedures; general principles and practical application; capabilities and limitation of the various systems.
- (g) Pollution: the prevention of pollution and the master's duties, obligations and liabilities, including the keeping of records.

Grade 1 (Mate)—Navigational Aids and Instruments examination

- (a) The construction, siting, and maintenance of the magnetic compass and associated equipment. Causes of deviation, the production of a table of deviations. Co-efficients A, B, C, D and E. The evaluation of the approximate co-efficients from given data and their relationship with the deviation. An appreciation, without calculations, of the effects of permanent magnetism and induced magnetism. Principles of compass adjustment and methods of adjustment. Heeling Error. Gaussin error and retentive error.

- (b) Principles of the gyro compass. Errors associated with the gyro compass, including latitude, course and speed error and correction; ballistic deflection and its relation to change of speed error, rolling error and how it is minimized. The principle parts of a gyro compass; fundamental differences in the construction and operation of the better known gyro compasses.
- (c) Principles, operation and use of gyro and transmitting magnetic compass repeater systems; automatic pilot; projector compasses; rate of turn indicators.
- (d) Navigational and collision avoidance radar, characteristics, application, capabilities and limitations. Assessment of performance. Knowledge of IMO Performance Standards for navigational equipment and automatic radar plotting aids (ARPA) Doppler Radar.
- (e) Decca, Loran, Consol, Omega, direction-finding and satellite navigation systems; the characteristics, applications, capabilities and limitations of each systems. The comparative accuracy of position fixing systems of all types, including non-radio systems and methods. Errors associated with the various systems.
- (f) Principle and practical application of echo sounding devices, logs and speed indicators.
- (g) An outline knowledge of recent developments in navigational aids.

Grade 1 (Mate)—Meteorology, Currents and Routing Examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 2 (Mate)—Meteorology, Currents and Routing examination.

Grade 1 (Mate)—Electrotechnology examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 2 (Mate)—Electrotechnology examination.

Grade 2 (Mate)—Navigation and Chartwork examination

Note Questions on the syllabuses for the Grade 3 (Mate)—Navigation examination and Grade 3 (Mate)—Chartwork and pilotage examination may be asked in addition to questions on the following subject:—

- (a) To find the approximate altitudes and azimuths of bodies available for observation at morning or evening twilight.
(Candidates may use a short method or a star identification device).
- (b) Great circle course and distance.

Grade 2 (Mate)—Meteorology, Currents and Routing Examination

- (a) Air masses: general ideas on source regions, classification and properties, particularly those affecting the Pacific region. The frontal theory of the formation of depressions; occlusions, occluded depressions, secondary depressions and families of depressions.

- (b) Adiabatic changes in the atmosphere. Dry, saturated and environmental lapse rates. Stability, instability and conditional instability. The development of thunderstorms.
- (c) A full knowledge of the development and decay of tropical revolving storms; their seasons, tracks, associated weather and probable movement, particularly in the Pacific region. Navigation in the vicinity of and the rules for avoiding tropical storms. Reports to be made under international conventions.
- (d) Use of synoptic chart to deduce the weather at specified points and to forecast the probable changes over sea areas. Facsimile weather charts and their uses.
- (e) Principal ocean currents, particularly in the Pacific region; their names and characteristics. Causes of ocean current, general surface circulations, direct and indirect effect of prevailing winds, gradient current, seasonal changes in the general circulation.
- (f) Selection of ocean routes. General principles of weather routing; use of prognostic surface weather and wave charts. Use of current atlases and other charts and navigational publications relevant to ocean navigation.

Grade 2 (Mate)—Ship Construction and Stability examination

- (a) An outline knowledge of classification of vessels, periodic surveys for retention of class. Tonnage certificates. Load Line: period and conditions of validity of certificates, requirements of annual survey, an understanding of those aspects of the conditions of assignment which affect stability and sea worthiness of a vessel. An outline of national regulations in respect of the construction of vessels and surveys required under these Regulations.
- (b) The use of Simpson's second and five-eighth rules in the computation of areas, volumes and centroids.
- (c) A fuller knowledge of the principal structural members of a vessel than is required for examination in respect of certificates of competency for lower grades.
- (d) Permeability of a compartment. The effect of bilging and flooding midship compartments symmetrical about the centre line.
- (e) Stability and trim when dry-docking, slipping or grounding. Vessel stability at sea. Dangers to a vessel with a heavy list and precautions when righting. Ballasting.
- (f) Use of the stability, hydrostatic and stress data supplied to vessels. An understanding of the factors affecting the shape of a curve of statical stability and the significance of the area under the curve. Initial stability and its limitation to small angles of inclination.
- (g) Immediate and subsequent treatment of damage to a vessel.

Grade 2 (Mate)—Electrotechnology examination

Note: The questions to be set in this paper will be of a practical nature. Theoretical and mathematical content will be kept to a minimum.

- (a) The magnetic effect of an electric current, effect on ferro-magnetic materials; field due to a current carrying coil and the introduction of a ferro-

magnetic core. Movement of a current-carrying conductor in a magnetic field. Simple electro-magnetic devices; their function and action; the electric bell, buzzer, electro-magnetic relay; simple circuits. Moving iron meter for measuring current.

- (b) Effect of current carrying wires in the vicinity of a compass. Effect of growth and decay of current on a magnetic field and effect on nearby conductors. Electro-magnetic induction, self induction, mutual induction, the induction coil.
- (c) The generator principle, generation of an alternating voltage, the simple commutator, simple DC generator. Effect of a load on the output voltage of a DC generator. Series, shunt and compound wound generators. Electric motors. Speed and torque relationship; starters, speed control. The telephone, carbon microphone. Simple telephone circuits.
- (d) Alternating voltages and currents; their frequency and phase relationship; peak, average and RMS values. The effect on an alternating current of resistance, inductance and capacitance. The series AC circuit. Oscillations in a parallel AC circuit. Relationship between induction, capacitance and frequency. Tuning. Crystal controlled frequencies. Three phases AC. Star and delta connection. Voltage/phase relationship. Rectification and metal rectifiers. The transformer and its application in power packs.
- (e) The propagation of electro-magnetic waves; relationship between frequency, velocity and wavelength. The ionosphere and its effect on radio waves. Ground waves and sky waves; Effect of electro-magnetic waves impinging on objects; induced currents and re-radiation. Operation of thermionic valves and semi-conductors; action in simple rectifier, amplifier and oscillator circuits.

Description of a simple radio telephone transmitter and receiver using schematic diagrams; and understanding of the function of each part. The principle of the carrier wave; amplitude and frequency modulation; detection and amplification. Single sideband operation. Superheterodyne reception; advantages and disadvantages. The alarm signal generator.

- (f) Aerials; polar diagrams. The size of aerial elements related to frequency. Directional aerials. Basic principles of radio direction finding; use of zero signals, ambiguity, sense and sense aerial; the effect of addition of signals from loop and vertical aerial. Fixed crossed loops aerial; goniometer. Errors and calibration. Limitations of accuracy and range. Homing.

Grade 2 (Mate)—Compasses and Navigational Aids Examination

- (a) The construction, siting care and maintenance of the magnetic compass, binnacle and associated equipment. Methods of obtaining a table of deviation; analysis to obtain the approximate co-efficients A, B, C, D, and E. Principles of compass adjustment and the practical correction of co-efficients B, C and D. The effect of permanent and induced magnetism; the separation of permanent and induced B by means of observations taken in widely separated magnetic latitudes. Heeling error; its cause, effect and methods of correction.
- (b) Descriptive treatment of one commonly used type of gyro compass. Starting and stopping procedure. (Repeaters and ancillary equipment including automatic steering system.) Routine maintenance.

- (c) Basic description of Satellite Navigator and Omega System; coverage areas; fixing position; fixed and variable errors and their causes.
- (d) Basic principle of the echo sounder. Cause of errors and unwanted echoes and effects.
- (e) Radar as an aid to navigation and collision avoidance. A recapitulation of the topics covered in the Radar Observer course.

Grade 2 (Mate)—Shipmaster's Business examination

Note: *An outline knowledge of the following subjects is required, sufficient to enable the Chief Mate of a vessel to carry out his functions or to take temporary command in the event of incapacity of the master.*

- (a) The registration certificate and its legal significance.
- (b) Certificates and other documents required to be carried on board ship by national legislation or by international Conventions. Procedure for obtaining certificate including periodical surveys and inspections. Periods of validity.
- (c) Engagement, discharge and management of crews. Manning requirements of vessels under national legislation. Agreement with crew. Discipline and the treatment of disciplinary offences. Wages and effects. Deceased seamen and seamen left behind. Advances and allotments. Engagement of substitutes and repatriation.
- (d) The official log book and the law relating to entries. Reports to be made in the event of injury to or death of crew or other persons on board.
- (e) Procedure for entering and clearing a vessel.
- (f) Loadline marks. Seasonal zones. Entries and reports in respect of freeboard, draft and allowances.
- (g) The tonnage mark; a general appreciation of the effect of submersion of the tonnage mark.
- (h) The safety of the vessel, crew and passengers. Assistance of vessels in distress. Duties in the case of strandings, collision and other accidents. Salvage.
- (i) Pollution; the Master's duties, obligations and liabilities, including the keeping of records.
- (j) The law relating to the reporting of ice, derelicts, tropical revolving storms and other dangers to navigation.
- (k) An outline knowledge of the Master's obligations with respect of marine insurance and the carriage of goods by sea. Principal clauses in a Bill of Lading and Charter Party. Protests, cargo surveys, certificates of seaworthiness. Manifests, Average and General Average. Procedure at a port of refuge. Lloyd's agents.
- (l) An outline knowledge of the Master's obligations with respect, to pilotage.
- (m) Crew accommodation. Hygiene of the vessel and welfare of the crew. An outline knowledge of the regulations relating to medical stores. Inspections

and reports. Fresh water and provisions. Procedure in cases of infectious disease, illness or accident. Fumigation and pest control. Maritime declaration of health and port health requirements.

Grade 3 (Mate)—Navigation examination

Note: Questions from the syllabus for Grade 4 (Mate)—Practical Navigation examination may be included, in addition to the following syllabus.

- (a) Practical problems on plane, parallel and mercator sailings.
- (b) Find the estimated position of the vessel at any time, given compass courses, errors, distances run, allowing for the effect of wind and/or current. Finding the average set and drift experienced over a period and the course and speed made good.
- (c) From an observation of any body out of the meridian, to find the direction of the position line and a position through which it passes.
- (d) To obtain a position by the use of position lines obtained from any two observations of the sun or stars, with or without an intermediate run and allowance for current.
- (e) To find the true bearing of any body and thence the compass error and the deviation for the direction to the vessel's head.
- (f) Latitude by observation of Polaris.
- (g) Latitude by meridian altitude of any body. Altitude to set on the sextant. Time of meridian passage, rising and setting.
- (h) Geographical position of a heavenly body. Circles of position and position lines. Intercepts. Circumpolar stars. Recognition of stars of first magnitude.

Grade 3 (Mate)—Chartwork and Pilotage examination

- (a) To fix the position by D/F cross bearings or by D/F bearing combined with other information, applying and necessary corrections.
- (b) The use of position lines and circles obtained by any method (excluding hyperbolae and surveying systems). The use of a single position line approaching the coast.
- (c) Given the course steered, an estimated allowance for current together with the distance run, to determine the actual set and rate of the current experienced between two positions.
- (d) The use of tables and tide curves to find the time at which the tide reaches a specified height or the height of the tide at a given time and thence the approximate correction to be applied to soundings or to chartered heights of shore objects.
- (e) To assess and select for accuracy, methods of fixing a position. Reliability of fixes.
- (f) Candidates will be examined orally on the information given on a chart or plan, particularly about selection of suitable anchorages; approaching anchorages, entering narrow waters and passages in Pacific region ports. Landfalls in any condition of weather and visibility. Traffic lanes and separation zones. Radar responsive targets. Lattice charts.

Grade 3—(Mate)—Ship Construction and Stability examination

- (a) Midship sections of single deck, tween deck, container ship and bulk carriers. Functions, construction and stiffening of watertight bulk-heads, including the collision bulk head.
Hatchways and closing appliances. Storm frame, stern tube and adjacent structure; propellers and propeller shafts; rudders. Hawse pipes, bulbous bows. Bilge and ballast line system; outline knowledge of tanker piping system. Shell and deck plating. Super-structure, masts, derricks and cranes.
- (b) Rivet work. Testing a line of rivets. General ideas on welding processes in construction and repair work; types of weld, common faults, visual examination and methods of testing welded work. Testing of tanks and other watertight work.
- (c) Stresses and strains in vessels in a seaway or due to loading, ballasting or dry-docking. A knowledge of the parts of a vessel specially strengthened to withstand such stresses or where excessive corrosion is likely to occur. Methods adopted during construction to prevent corrosion. Methods of compensating or discontinuity of strength; local and special stiffening.
- (d) Angle of loll and action to be taken. Stiff and tender vessels. Changes in stability during a voyage. Use of stability and hydrostatic data supplied to vessels.
- (e) Calculation of the position of the centre of gravity of a vessel for different conditions of loading or ballasting. The effect of adding, removing, shifting or suspending weights. Calculation of the virtual rise in the position of the centre of gravity due to slack tanks. Transverse and longitudinal metacentres.
- (f) Changes of trim and draft due to loading, discharging of shifting weights.
- (g) The use of Simpson's First Rule in the computation of areas and volumes.

Grade 3 (Mate)—Ship Operation examination

- (a) An outline knowledge of the requirements relating to the carriage and handling of cargo, including the IMO Code of Safe Practice for Solid Bulk Cargoes, the International Maritime Dangerous Goods Code, international requirements for carriage of grain, relevant national regulations, notices and codes of safe practice, tanker safety guides.
- (b) General principles of cargo stowage and handling. Purchases and mechanical advantage. Stresses in cargo working gear.
- (c) A general understanding of the carriage of special cargoes, such as refrigerated cargo, oil and liquids in bulk, chemicals, deck cargoes and heavy lifts. Safety precautions to be taken. Cargoes liable to shift. Ballasting, tank cleaning and gas freeing. Bilge and ballast line systems. Piping arrangements in bulk liquid carriers.
- (d) Organisation of the crew for maintenance, routine and emergency duties. Inspection and maintenance of vessel and equipment. Slipping and dry-docking routine. Repairs.

- (e) Damage reports. Repair lists. Stores indents.
- (f) Cause and prevention of corrosion in a vessel's structure. Properties and uses of paints, resins and other protective coverings. Methods of corrosion control in steelwork and between dissimilar metals. Treatment of woodwork and composite decks. Cement work.
- (g) Documentation of cargo. Mate's receipts, boat notes, dangerous goods lists, way bills, cargo plans. Mate's log.
- (h) Certificates and other documents required to be carried on board ship by government legislation or international conventions. The official log book. Engagement, discharge and management of crew. Procedure for entering and leaving port. An outline of the legal requirements for the carriage of goods by sea, salvage and pilotage.
- (i) Hygiene of the vessel and welfare of the crew. Medical emergencies; types of assistance available. Fumigation and pest control.

Grade 3 (Mate)—Meteorology examination

The syllabus for this examination is identical to that for Grade 4 (Mate)—Meteorology examination. A higher standard of knowledge will be expected from candidates for Grade 3 (Mate)—Meteorology examination in comparison with those for the Grade 4 (Mate)—Meteorology examination.

Grade 3 (Mate)—Principles of Navigation examination

- (a) A general understanding of the following—The shape of the earth, poles, equator, meridian, parallels of latitude. Position by latitude and longitude. Direction, bearing and distance. Units of measurement. Difference of latitude, difference of longitude and departure. Mean latitude. Meridional parts. Formulae for plane, parallel and mercator sailings. Great and small circles on a sphere.
- (b) The celestial sphere, definitions on the celestial sphere. Apparent motion on the celestial sphere. Declination and sidereal hour angle. Azimuth and amplitude. Local hour angle. The PZX triangle. Rising and setting. Maximum azimuth. Solution of simple right-angled and quadrantal spherical triangles applied to the celestial sphere.
- (c) The solar system. Earth-moon system; effect on tides. Planetary motion. Earth's rotation and movement in orbit. Eclipses. Mean sun, ecliptic, first point of Aries. Equinox and solstice. Sunrise, sunset and twilight.
- (d) Time. Greenwich, local and zone time. Mean and apparent time, the equation of time. Sidereal time. Relationship between longitude and time.
- (e) Local, Greenwich and sidereal hour angles in time and arc.
- (f) Correction of Sextant altitude. Dip, refraction, and semi-diameter. Parallax in altitude and horizontal parallax.
- (g) Simple properties of mercator charts. Latitude and longitude scales, measurement of distance. Rhumb lines.

Grade 4 (Mate)—General Ship Knowledge examination

- (a) General ideas on ship-construction and on plans available on board ship. General definitions of main dimension. The names of the principal parts of

- a ship. The candidate will be expected to show his practical acquaintance with: Longitudinal and transverse framing: Beams and beam knees. Water-tight bulkheads. Hatchways and closing appliance. Shell and deck plating. Double bottoms and peak tanks. Bilges. Sounding pipes. Airpipes. General pumping arrangements. Side and wing tanks. Rudders. Steering gear. Stern frames. Propellers and propeller shafts. Stern tubes. The stiffening and strengthening to resist panting, pounding and longitudinal stresses. Causes and prevention of corrosion in a vessel's structure.
 - (b) General ideas on welding, riveting and burning and the precaution to be taken when such processes are carried out aboard ship.
 - (c) The meaning of the terms: Block coefficient. Gross and nett tonnage. Displacement. Deadweight. Buoyancy. Reserve Buoyancy.
 - (d) Use of displacement and tonnes per centimetre immersion scales to determine weight of cargo or ballast from drafts or freeboards. Effect of density of water on drafts and free-board.
 - (e) General understanding with definitions of: Centre of gravity. Centre of buoyancy. Metacentric height. Righting lever. Righting moment.
 - (f) The use of stability and hydrostatic data supplied to vessels. The effect of adding and removing weights. The danger of slack tanks.
 - (g) Loan line: an understanding of those aspects of the conditions of assignment which affect the stability and seaworthiness of a vessel.
 - (h) Rigging a vessel for loading and discharging cargo, the use of derricks, winches, and cranes. Calculation on the use of purchase including friction. Lining up pipelines on oil products carriers. The stowage, separation and dunnaging of cargoes including bulk cargoes. Duties of a deck officer in charge of a cargo watch. Causes of sweating and precautions to be taken before, during and after stowing to prevent damage by sweat. Ventilation systems of holds and tanks.
 - (i) A knowledge of the safety precautions to be taken during the loading and discharging of bulk oil, chemicals, and other dangerous commodities. Outline knowledge of the International Maritime Dangerous Goods Code. Calculations of capacities taken up by part cargoes and of space remaining. Conversion of weight measurement of cargo into space measurement and vice versa.
 - (j) The making and use of cargo plans.
 - (k) Care and maintenance of all life saving and fire-fighting equipment and appliances, lights and sound signals.
 - (l) Precautions to be taken before entering cargo, ballast or oil tanks and void spaces and for working in these spaces.
- #### Grade 4 (Mate)—Chartwork and Pilotage examination
- (a) Given variation and a sample table of deviation of the magnetic compass, or gyro error, to convert true courses into compass courses and vice versa. To find the compass course and distance between two positions, allowing for wind and/or current. Given compass course steered, the speed of the vessel and the direction and rate of current, to find the true course made good and the estimated position arrived at.

- (b) Given the course steered and distance run, to determine the set and rate of the current experienced between two positions.
- (c) Compass error from transit bearings or by bearings taken from a known position.
- (d) To fix a position on a chart by simultaneous cross bearings and ranges, radar bearings and ranges, astronomical observations, or by any combination.
- (e) To fix a position by bearings of one or more objects with a run between and by observing special angles, e.g. 4 point bearings, with or without allowance for current, and to find the distance at which the vessel will pass off a given point. Horizontal and vertical angles; use as danger angles. Clearing marks. Distance of sighting lights.
- (f) To find the times and heights of high and low water at Standard Ports and at Secondary Ports by tidal differences. Use of Local Tide Tables and Admiralty Tide Tables Vol. 3.
- (g) Candidates will be examined orally on the information given on a chart or plan, particularly about: Danger to navigation, lights, depths and nature of bottom, depths and light contours, tidal information recognition of the coastline and radar responsive targets. Chart connection, buoys, beacons, lattice charts. The use of Admiralty and local sailing directions, notices to mariners. The selection of suitable anchorages and entering narrow waters; landfalls in thick and clear weather. Use of soundings.

Grade 4 (Mate)—Practical Navigation examination

- (a) Latitude by meridian altitude of the sun or a star. Approximate time of meridian passage. Approximate altitude to set on the sextant.
- (b) To find the true bearing of the sun at Sunrise or Sunset and thence the compass error and the deviation for the direction of the vessel's head.
- (c) Construction of a table of deviations using bearings of a distant fixed object.

Grade 4 (Mate)—Meteorology examination

Note: *The examination for this grade of certificate will be focussed on weather patterns prevalent in the Pacific region and weather information available in that region.*

- (a) Principle of the aneroid barometer. Reduction of readings to standard datum. The precision aneroid and barograph.
- (b) Principle of the thermometer and hygrometer. Relative humidity and dew-point. Precautions to be taken when making observations of temperature.
- (c) Beaufort scale of wind force and weather notation. Methods of estimating direction and force at sea.
- (d) Mean pressure distribution. Daily and seasonal changes in atmospheric pressure. Prevailing winds. Local and regional effects of heating and cooling. Land and sea breezes.

- (e) The characteristics of and weather associated with the principle pressure systems. Anticyclones, depressions; tropical revolving storms, permanent high and low pressure areas. Relationship between pressure distribution and wind. Buys Ballots Law.
- (f) Use of barometric observations at a single station in conjunction with weather signs. Forecasting the approach of a tropical revolving storm. Navigation in the vicinity of and rules for avoidance of tropical revolving storms.
- (g) Water vapour in the atmosphere, evaporation, condensation, precipitation and saturation. Formation and classification of clouds. Fog, mist and dew.
- (h) A knowledge of the types of weather messages available to vessels in the Pacific region.
- (i) Outline knowledge of ocean current systems of Pacific Region.

Grade 5 (Mate)—Practical Navigation examination

Chartwork

- (a) Given variation and a sample table of deviations of the magnetic compass to convert true courses into magnetic and compass courses and vice versa. To find the compass course between two position, with or without allowance for current. The effect of current on speed. Allowance for leeway. Given compass course steered, the speed of the ship and direction and rate of the current, to find the true course made good.
- (b) Laying off safe courses on a chart. To fix a position on a chart by simultaneous cross bearings, bearings and ranges, radar bearings and ranges or by any combination.
- (c) To fix a position by bearings of one or more objects with a run between, with or without allowance for current and to find the distance at which the ship will pass off a given point.
- (d) The use of clearing marks. Distance of sighting lights.
- (e) Candidates will be examined orally on the meaning of symbols and abbreviations given on a chart or plan; particularly dangers to navigation, lights, depths and nature of bottom, depth and height contours, tidal information, recognition of the coastline and radar responsive targets, buoys, beacons, the selection of suitable anchorages and entering narrow waters; landfalls in thick and clear weather. Use of sounds. Navigation in the vicinity of coral reefs.

Practical navigation

- (a) Practical questions on time, distance and speed.
- (b) Compass error from transit bearings or by bearings taken from a known position.
- (c) To find the times and heights of high and low water at standard ports and at secondary ports by tidal differences.

Grade 5 (Mate)—General Ship Knowledge examination

- (a) General ideas on ship-construction and on plans available on board ship. General pumping arrangements. General definitions of main dimensions. The names of the principle parts of a ship.
- (b) General understanding of—displacement, dead-weight; buoyancy. Use of displacement and tonnages per centimetre immersion scales to determine weight of cargo or ballast from drafts of free-board.
- (c) General understanding of stable, unstable and neutral equilibrium. The effect of adding, removing and shifting weights. The danger of slack tanks.
- (d) Rigging of ship for loading and discharging cargo, the use of derricks; winches and cranes. Calculation of breaking stress and safe working loads of cordage and wire rope. Rigging of purchases and their advantages. The stowage and securing of cargoes including bulk cargoes. A knowledge of the safety precautions to be taken during the loading and discharging of dangerous commodities.
- (e) Load Line: an understanding of those aspects of the conditions of assignment which affect the stability and seaworthiness of a ship.
- (f) Calculation of capacities taken up by cargoes and of space replacing. Conversion of weight measurement of cargo into space measurement and vice-versa.
- (g) Care and maintenance of all lifesaving and fire-fighting equipment and appliances; lights and sound signals.
- (h) Knowledge of those parts of a vessel where extensive corrosion or rot are most likely to occur and basic maintenance of small vessels.

Sailing Licence (Seagoing Service)—Chartwork and Pilotage examination

Note: *The candidate will be required to show a knowledge of chartwork and pilotage based on the largest scale chart covering the entire passage to which the licence would apply.*

- (a) Given variation as per chart, and a deviation card, to convert true courses to compass courses and vice versa.
- (b) To find the true and compass courses between two positions without allowance for current or leeway. Calculation of speed, distance to run and estimated time of arrival.
- (c) Fixing position on chart by cross bearings.
- (d) A non-mathematical appreciation of the effect of the prevailing currents and tides in the locality and the effects of leeway.
- (e) Recognising the more relevant chart symbols.

PART 2**SYLLABUSES FOR ORAL AND PRACTICAL EXAMINATIONS
(DECK OFFICERS)****Grade 1 (Master)—Duties and Responsibilities oral examination.**

The syllabus for this examination covers every subject included in the syllabuses for the Grade 2 (Master)—Duties and Responsibilities oral examination, the Grade 3 (Master)—Duties and Responsibilities oral examination and the Grade 4 (Master)—Duties and Responsibilities oral examination.

- Note**
- (1) *The syllabus includes a practical demonstration of the adjustment of a magnetic compass using a ship's binnacle and compass.*
 - (2) *The syllabus includes the subject included in the syllabus for the Grade 1 (Mate)—Business and Law examination.*

Grade 1 (Mate)—Duties and Responsibilities oral examination

The syllabus for this examination covers every subject included in the syllabuses for the Grade 2 (Mate)—Duties and Responsibilities oral examination, the Grade 3 (Mate)—Duties and Responsibilities oral examination and the Grade 4 (Mate)—Duties and Responsibilities oral examination.

- Note:** *The syllabus includes an outline knowledge of the method of practical adjustment of a magnetic compass.*

Grade 2 (Master)—Duties and Responsibilities oral examination

- Note**
- (1) *The syllabus includes a practical demonstration of the adjustment of a magnetic compass using a ship's binnacle and compass.*
 - (2) *The syllabus includes the subjects included in the syllabus for the Grade 1 (Mate)—Business and Law examination and the Grade 2 (Mate)—Shipmasters' Business examination as well as the following subjects.*

- (a) Exceptional circumstances. Loss of rudder and/or propeller. Jury steering arrangements. Action to be taken following collision or sustaining damage of any kind. Action to be taken on grounding—methods of refloating, surveys subsequent to re-floating. Beaching a vessel.
- (b) Steps to be taken when disabled and in distress. Preservation of passenger and crew in the event of wreck. Abandoning ship; survival procedure. Abandoning a wrecked vessel. Communications with the shore. The use of rockets and rocket apparatus.
- (c) Assisting a vessel or aircraft in distress. Rescuing the crew of a disabled vessel or ditched aircraft. Search and Rescue systems in the Pacific region and IMCO Merchant Ship Search and Rescue Manual.
- (d) Bad weather manoeuvres. Precautions at anchor and at sea. Anchoring and working anchors and cables in all circumstances. Approaching rivers and harbours and manoeuvring therein. Towing and being towed. Navigation in vicinity of ice.

- (e) Drydocking and slipping. General procedure and precautions to be observed. Distribution of weight. Drydocking with full cargo for inspection of propellers and shaftings. Bilge blocks. Leaving a vessel waterborne. Putting into port with damage to vessel and/or cargo, both from business and technical points of view. Safeguarding of cargo.
- (f) Prevention of fire at sea and in port. Methods used to prevent the spread of fire. Action to be taken to prevent the spread of fire. Full knowledge of the use of fire appliances and the precautions to be taken in their use.
- (g) Methods of pest control: fumigation of holds and living spaces, safeguards in applying various methods.
- (h) General organisation of ship's management. Crew welfare and training. Routine inspections of living quarters and store rooms.
- (i) Compensation and adjustment of compasses: candidates will be questioned on the practical adjustment of the magnetic compass using a ship's binnacle and compass.
- (j) Collision Regulations as included in paragraph (f) of the syllabus for the Grade 4 (Master)—Duties and Responsibilities oral examination.
- (k) Pollution: the prevention of pollution, master's duties, obligations and liabilities the keeping of records.
- (l) Voyage planning and selection of ocean routes.

Grade 2 (Mate)—Duties and Responsibilities oral examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 2 (Master)—Duties and Responsibilities oral examination except that only an outline knowledge of the method of the practical adjustment of the magnetic compass is included and questions from Grade 1 (Mate)—Business and Law examination will not be included.

Grade 3 (Master)—Duties and Responsibilities oral examination

- (a) The handling of heavy weights with special reference to type and strength of gear used. The use and care of all deck and above deck appliances and fittings including winches, capstans, windlasses, davits, fairleads emergency steering gear and fittings used between anchor and cable locker.
- (b) Anchors; different types of anchors and their advantages and disadvantages. Cables and their care. Preparation for anchoring. Operation of anchoring with a single anchor and use of a second anchor. Clearing a foul anchor and hawse. Anchoring in a tideway, in confined waters and in deep water. Mooring. Handing off an anchor. Breaking and slipping cables. Getting under way. To carry out an anchor with boats. Kedging.
- (c) Effect of current, wind, shallows and draft on manoeuvring. Manoeuvring in rivers and harbours. Berthing alongside and leaving quays and oil terminals with or without the use of tugs. Management of vessels in heavy weather. Means to employ to keep a vessel disabled or unmanageable out of the trough of the sea and to lessen the lee drift. Handling a disabled vessel. Extra precautions to be taken before the onset of heavy weather.
- (d) An outline knowledge of the regulations concerning lifesaving and fire-fighting appliances. Measures to be taken following accidental damage,

including collision, grounding, heavy weather damage and leaks. Prevention of fire at sea. Spontaneous combustion. Methods of dealing with fire on board a vessel. The organisation and direction of fire-fighting and life-boat and liferaft preparation parties.

- (e) A practical knowledge of the screening of vessel's navigation lights. Preparation for dry docking and undocking; slipping and un-slipping Use of shores, bilge blocks and bilge shores. Measures to be taken to prevent the spillage of oil during cargo work, bunkering or oil transfer. Oil records. Use of oil dispersants.
- (f) A knowledge of Collision Regulations as included in paragraph (f) of the syllabus for Grade 4 (Master)—Duties and Responsibilities oral examination.
- (g) Exceptional circumstances as included in paragraph (g) of the syllabus for Grade 4 (Master)—Duties and Responsibilities oral examination.
- (h) Outline knowledge of the means for correction of errors of magnetic and gyro compasses.

Grade 3 (Mate)—Duties and Responsibilities oral examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 3 (Master)—Duties and Responsibilities oral examination.

Grade 4 (Master)—Duties and Responsibilities oral examination

- (a) To read and understand a barometer, thermometer, hydrometer and hygrometer. To use an azimuth mirror or other instrument for taking bearings. To use a sextant for taking vertical and horizontal angles; to read a sextant both on and off the arc. To find the index error of a sextant. To correct a sextant having perpendicularity, side, and/or index errors. Care and rating of chronometers.
- (b) Rigging of ships, methods of finding the proof and safe working loads of ropes, including synthetic fibre and wire ropes. Rigging purchases. Knots, bends and hitches in common use. Seizings, rackings, ropes and chain stoppers. Splicing plaited and multi-strand manila and synthetic fibre rope and wire rope. Slings a stage, rigging a bosun's chair and pilot ladder.
- (c) Preparations for getting under way. Duties prior to proceeding to sea and making harbour and leaving quays; jetties or other vessels and securing to buoys with special reference to the after end of vessel. Helm orders. Conning the vessel. Effect of propellers on the steering of a vessel. Stopping, going astern, manoeuvring. Turning a power driven vessel short round. Emergency manoeuvres. Bringing a vessel to a single anchor in an emergency. Man overboard. The duties of the Officer of the Watch at sea and at anchor. Dragging anchor. Duties of the deck officers in port.
- (d) Anchors, cables; their use and stowage. Knowledge of the use of all deck appliances including emergency steering gear. Marking and use of ordinary lead line. Use and upkeep of mechanical logs and sounding appliances. The use and care of rocket and line throwing apparatus.
- (e) The use and care of life-saving appliances. Management of boats under oars, sails and power and in heavy weather. Beaching of landing. Landing

- on a beach through surf. Survival procedure in lifeboats and liferafts. The use and care of fire appliances.
- (f) A full knowledge of the content and application of the current International Regulations for Preventing Collisions at Sea, with particular emphasis on the Steering and Sailing Rules. International buoyage and wreck marking system.
 - (g) Exceptional circumstances. Loss of rudder. Shifting a damaged rudder. Construction and rigging of jury rudders. Collision. Running repairs and precautions in case of accidents. Action to be taken on grounding—methods of refloating. Beaching a vessel.
 - (h) Certificates and other documents required to be carried on a vessel trading in near coastal waters. The official Log Book. Engagement, discharge and management of crew. Procedure for entering and leaving port. Hygiene of the vessel and welfare of the crews. Medical emergencies: types of assistance available. Fumigation and pest control. Search and rescue systems in use in local waters and internationally. Knowledge of the IMO Merchant Ship Search and Rescue Manual (MERSAR).
 - (i) Basic knowledge of precautions to be observed to prevent pollution of marine environment.
 - (j) Basic knowledge of principles of magnetic and gyro compasses.
 - (k) Use of automatic pilot.
 - (l) Echo Sounder—Use of equipment and ability to apply information correctly.
 - (m) Practical use of satellite navigator.

Grade 4 (Mate)—Duties and Responsibilities oral examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 4 (Master)—Duties and Responsibilities oral examination.

Grade 5 (Master)—Duties and Responsibilities oral examination

- (a) The ability to read a magnetic compass in degrees and to set a course by it. Siting a magnetic compass on a small craft. Use of automatic pilot.
- (b) The use of an azimuth mirror, pelorus or other instrument for taking bearings.
- (c) A working knowledge of the current International Regulations for Preventing Collisions at Sea. Distress and pilot signals: penalties for misuse. Contents and use of local shipping notices and navigation warnings.
- (d) The meaning of the more important single flag signals in the International Code of Signals and the use of certain of these in morse code transmission, either by sound or lamp.
- (e) The use and maintenance of lifesaving and fire-fighting appliance. The requirements of the national regulations with regard to vessels of restricted tonnage and limits. The keeping of a deck log. The operation of vessels radio sets for distress and commercial channels.
- (f) Helm orders, conning a vessel, effects of propellers on the steering of a vessel, stopping and going astern, shiphandling of small craft.

- (g) Anchors and cables. A general understanding of their use and stowage. Preparations for anchoring. Operation of anchoring with single anchor and use of second anchor. Mooring. Clearing of a foul anchor. Slipping a cable. Anchoring in a tideway and in a confined space. Anchoring in deep water. To carry out an anchor with boats. Getting under way. Keeping an anchor watch. Action to be taken when dragging anchor.
- (h) Management of a small power driven vessel in an emergency or in heavy weather. Means to employ to keep a vessel disabled or unmanageable, out of the trough of the sea and lessen her lee drift. Collision, grounding, accidents to hatches, leaks, fires and their treatment. Man overboard.
- (i) Preservation of crew and passengers in the event of wreck.
- (j) Marking and use of hand leadline. Use and upkeep of mechanical logs and engine room telegraphs. Knowledge of the use of deck appliances with particular attention to wind-lasses and winches.
- (k) A general understanding of the stowage of various common cargoes usually carried in the Pacific Region trade. The stowage of deck cargo with particular regard to stability.
- (l) A working knowledge of the national regulations relating to dangerous goods and pollution of the marine environment. Outline knowledge of the International Maritime Dangerous Goods Code.
- (m) To prepare portable radio equipment for operation in a lifeboat or liferaft, erect aerial and operate the radio telephone facility.
- (n) Certificates and other documents required to be carried on a vessel trading in near coastal waters. The Official Log Book. Engagement, discharge and management of crew. Procedure for entering and leaving port. Hygiene of the vessel and welfare of the crew. Medical emergencies, types of assistance available. Fumigation and pest control. Search and rescue system.
- (o) Slipping: general procedures and precautions to be observed, distribution of weight.
- (p) Knowledge of principles of navigational watchkeeping at sea and at anchor. Duties of deck officers in port.

Grade 5 (Mate)—Duties and Responsibilities examination

The syllabus for this examination covers every subject included in the syllabus for the Grade 5 (Master)—Duties and Responsibilities oral examination.

Grade 5 (Mate)—Meteorology oral examination

- (a) To read and understand a barometer and thermometer.
- (b) Barometric pressure: use of barometric observations in conjunction with weather signs.
- (c) The Beaufort windscale and weather notation in use at sea. Methods of estimating direction and force of wind at sea.
- (d) Recognition of the signs of an approaching tropical revolving storm. Warnings, visual or radio, at sea and in port. Action when a tropical revolving storm is imminent.

- (c) A knowledge of the weather information available to shipping in the near coastal trade area.
- (f) Weather observation, recording in ship's logbook and reporting.

Sailing Licence (Harbours and River Craft)—Boat Handling in Harbours and Rivers oral examination

- (a) Handling power boats. Effect of propeller on steering the boat. Berthing, unberthing alongside and stern of wharf. Effect of wind (and current if applicable). Turning short round. Securing to buoy. Anchoring. Man overboard.
- (b) Use and maintenance of statutory lifesaving and fire fighting appliances.
- (c) A working knowledge of the Port Regulations and Marine Regulations applicable to the harbour or river and type of craft.
- (d) The ability to steer by compass. Siting a compass on a small craft.
- (e) A working knowledge of the Collision Regulations: Steering and Sailing Rules; recognition of the lights for a power, sailing and towing vessel. Recognition of the sound signals for vessels manoeuvring.
- (f) Recognition of hurricane warnings both visual and by radio. Action to be taken.
- (g) A knowledge of the harbour lights, beacons, dangers, prohibited anchorages and general topography applicable to the particular harbour or river.
- (h) A working knowledge of marine engines and bilge pumps for small craft.
- (i) Safe handling of fuels and gases used in small craft.
- (j) Duties to other vessels and personnel in relation to collision or distress.

Sailing Licence (Harbour and River Craft)—Boat Handling in Harbours and Rivers practical examination

A practical examination of ability aboard a craft in the relevant area during which the examinee demonstrates his practical ability of the subjects included in the syllabus for the Sailing Licence (Harbour and River Craft)—Boat Handling oral examination.

Sailing Licence (Short Sea Service)—Boat Handling in Fiji Coastal Waters oral examination

The syllabus for this examination covers every subject included in the syllabus for the Sailing Licence (Harbours and Rivercraft)—Boat Handling in Harbours and Rivers oral examination and in addition the following—

- (a) Knowledge of any Maritime regulations of Marine districts through which the route lies.
- (b) Use of a chart to identify beacons, dangers, prohibited anchorages, general topography, reef passages and sheltered anchorages along the route.

- (c) Use of a chart to select magnetic courses.
- (d) Recognition of lights and shapes shown by vessels fishing, not-under-command, and engaged in underwater operations. A working knowledge of sound signals in restricted visibility.
- (e) A working knowledge of trim, stability and risk of slack water in bilges.
- (f) Passenger and Cargo documentation. Masters liability in carriage of passengers and cargo.
- (g) Use and recognition of distress signals.
- (h) Action on grounding. Use of hand lead.

Sailing Licence (Short Sea Service)—Boat Handling in Fiji Coastal Waters practical examination

A practical examination of ability aboard a craft in the relevant area during which the examinee demonstrates his practical ability of the subjects included in the Sailing Licence (Short Sea Service)—Boat Handling in Fiji Coastal Waters oral examination.

Sailing Licence (Seagoing Service)—Boat Handling in open Seas oral examination

The syllabus for this examination covers every subject included in the syllabus for the Sailing Licence (Short Sea Service)—Boat Handling in Fiji Coastal Waters oral examination and in addition the following:

A full working knowledge of the Collision Regulations; action in heavy weather, use of sea anchor, collision, a working knowledge of local search and rescue procedures; recognition of visual signs of a tropical cyclone; recognition of the more important International Code flags and their single letter meanings.

Sailing Licence (Seagoing Service)—Boat Handling in Open Seas practical examination

A practical examination of ability aboard a craft in the relevant area during which the examinee demonstrates his practical ability of the subjects included in the syllabus for the Sailing Licence (Seagoing Service)—Boat Handling in Open Seas oral examination.

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PART 3
SYLLABUSES FOR SIGNALS EXAMINATIONS
(DECK OFFICERS)

Grade 1 (Mate)—Signals examination

The syllabus for this examination covers every subject included in the Grade 2 (Mate)—Signals examination.

Grade 2 (Mate)—Signals examination

The subjects included in the Grade 3 (Mate)—Signals examination and the Grade 4 (Mate)—Signals examination.

Grade 3 (Mate)—Signals examination

- (a) To send and receive signals in—
 - (i) Morse code by flash lamp up to 6 words per minute;
 - (ii) International Code of Signals.
- (b) An understanding of the Standard Marine Navigational Vocabulary.

Grade 4 (Mate)—Signals examination

- (a) To send and receive signals in—
 - (i) Morse code by flash lamp up to 6 words per minute;
 - (ii) International Code of Signals.
- (b) Prepare portable radio equipment for operation in lifeboat or liferaft, erect aerial and operate all the distress frequency facilities on the equipment provided.

Operation of Emergency Position—Indicating Radiobeacons.