L.N. 69 of 1989

MERCHANT SHIPPING ACT, 1973 (ACT NO. XI OF 1973)

Merchant Shipping (Certification of Deck Officers) (Amendment) Regulations, 1989

IN exercise of the powers conferred by section 92 and 374 of the Merchant Shipping Act, 1973, the Minister responsible for Devolopment of Tertiary Sector has made the following regulations:—

Citation.

1. These regulations may be cited as the Merchant Shipping (Certification of Deck Officers) (Amendment) Regulations, 1989 and shall be read and construed as one with the Merchant Shipping (Certification of Deck Officers) Regulations, 1979, hereinafter referred to as "the principal Regulations".

L.N. 71 of 1979.

Amends regulation 3 of the principal Regulations.

2. Paragraph (d) in regulation 3 of the principal Regulations shall be substituted by the following new paragraph:

"(d) in any case, has passed the examination in the subjects specified in the relative syllabus as set out in the First, Second or Third Schedule to these regulations, as the case may be:

Provided that prior to the grant of a certificate of competency as Master the Registrar-General may require a holder of a certificate of competency as First Mate not issued in terms of these regulations, or issued in terms of these regulations but prior to the first day of June nineteen hundred and eighty nine, to prove the satisfaction of the Registrar-General that he has passed an examination in Papers 4 to 9 specified in the relative syllabus set out in the Second Schedule to these regulations:

Provided further that the Registrar-General may, under such conditions as he may deem fit to impose, exempt from the whole, or from any part of the written part of the relative examination, any person who proves to the satisfaction of the Registrar-General that he has passed an examination which, in the opinion of the Registrar-General, is equally efficient to the requirements of these regulations.".

Amends regulation 4 of the principal Regulations.

3. Regulation 4 of the principal Regulations shall be amended as follows:

(1) Paragraph (1) thereof shall be substituted by the following new paragraph:

"(1) Subject to the provisions of regulation 5 of these regulations, a person shall not be eligible to take the examination referred in paragraph (d) of regulation 3 of these regulations unless he has:

(a) performed the appropriate qualifying service at sea specified in regulation 6 of these regulations; and

(b) followed a course of nautical training approved by the Minister.".

(2) Paragraph (6) thereof shall be substituted by the following new paragraph:

"(6) The examiners shall be appointed from a list of competent persons approved by the Minister:

Provided that the persons appointed to conduct the Oral examinations shall hold a certificate of competemcy not below that of a Master.".

Substitutes the Second, Third and Fourth Schedules of the principal Regulations.

4. For the Second, Third and Fourth Schedules of the principal Regulations there shall be substituted the following new schedules:

SECOND SCHEDULE

Regulation 3

EXAMINATION FOR CERTIFICATE OF COMPETENCY AS FIRST-MATE

The examination consists of three parts: written, oral and signals; candidates will be expected to secure a pass in all parts.

To secure a pass in the written part candidates will be expected to obtain a minimum number of marks in each paper as specified below, and not less than sixty per cent of the total number of marks. In the oral and signals examination a somewhat higher standard will be required.

The written part consists of:

	Paper	Time	Total Marks	Percentage Marks
1.	Meteorology	3 hrs	120	50%
2.	Ship-board Operations	3 hrs	120	50%
3.	Ship construction	3 hrs	120	50%
4.	Business and Law	3 hrs	120	50%
5.	Engineering and Control Systems	3 hrs	120	50%
6.	Navigation	2½ hrs	120	60%
7.	Passage Planning	2½ hrs	120	70%
8.	Navigation Instrumentation	3 hrs	120	50%
9.	Ship's Stability	3 hrs	200	60%

SYLLABUS

WRITTEN

Paper 1 (3 hours) Meteorology

(a) Air masses; general ideas on source-regions classification and properties. Structure of depressions, general distribution of weather in a depression. Fronts; the frontal theory of the formation of depressions, occlusions, occluded depressions, secondary depressions, 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 localities, names, seasons, tracks and associated weather; forecasting and probable movement.

(d) A knowledge of the information available under Section IV of the Ship's Code and Decode Book. Use of a 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; their names and characteristics. Causes of ocean currents, general surface circulation of the oceans, direct and indirect effect of prevailing winds, gradient currents, seasonal changes in the general circulation.

(f) The main types of floating ice and their origins. General limits of ice in both hemispheres, seasonal developments and recessions, movement of icebergs.

Paper 2 (3 hours) Ship-board operations

(a) Organisation and training of crew both for routine and emergency duties. Damage control and fire-fighting plans; emergency station lists.

(b) Inspection and maintenance of the ship and her equipment. General repairs, preparation of repair lists. Dry-docking routine. Properties and uses of paints, resins and other protective coverings.

(c) General principles of the stowage and handling of all types of cargo, in greater depth than is required at the lower grades, including preparations for their carriage and care in transit. Calculations relating to stowage (both of dry and liquid cargoes) and to the use of cargo gear.

(d) Ballasting. Tank cleaning and gas freeing. Bilge and ballast line systems. Piping arrangements in bulk liquid carriers.

(e) Knowledge of the regulations relating to the carrieage and handling of cargo. A general knowledge of the relevant Merchant Shipping Notices and International Codes of Practice.

(f) A knowledge of the requirements of the Load Line Rules as they affect the working of the ship; the significance of the various zones and seasonal areas; preparation of annual survey.

(g) Preparation for Safety Equipment, Safety Construction and Classification surveys; and outline knowledge of the significance of the certificates issued.

(h) Tonnage certificates and their purpose.

Paper 3 (3 hours) Ship construction

(a) Types of ships. General ideas on strength and construction in relation to particular trades, including specialised carriers.

The use of specialised steels, aluminium and fire resistant materials in ship construction.

(b) Midship sections of single deck and tween deck ships, including bulk carriers, container ships and specialised carriers. Functions, construction and stiffening of watertight bulkheads, including collision bulkhead. Structure at the stern, construction, stiffening and closing arrangements of hatchways and superstructures, tank openings, watertight and hull doors.

(c) General ideas on welding processes in construction and repair work, types of weld, common faults, visual examination of welded work.
Testing of tanks and other watertight work.
Methods of corrosion control.

(d) Stresses produced by shear and bending. To produce simple curves of load, shear force and bending moments.

(e) Classification of ships; periodic surveys for retention of class. The cargo Ship Construction and Survey Rules and surveys required under the Rules.

Paper 4 (3 hours) Business and Law

(a) Registration of ships. The certificate of registry and its legal significance.

(b) Certificates and other documents or publications required to be carried abroad ship; their use, how they are obtained, and (if appropriate) the period of their validity.

(c) Engagement, discharge and management of crews. Manning scales and certificates. Contracts of employment, wages and other remuneration, allotments, money orders, payments into bank accounts, superannuation, national insurance, income tax. Deceased seamen, engagement of substitutes, repatriation.

(d) The Official Log Book and law relating to entries. Offences relating to misconduct, to endangering ship and against persons on board. Discipline and treatment of disciplinary offences. Civil liability for certain offences.

(e) Custom house procedure, entering and clearing ship. Function of Ship's agents.

(f) Entries and reports in respect of freeboard, draught and allowances.

(g) The safety of the ship, 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 and 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 dispatch (including calculations). The law relating to the carriage of cargo, and the ship-owner'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 of international organisations concerned with shipping.

(l) Pollution: the Master's duties, obligations and liabilities including the keeping of records.

Paper 5 (3 hours) Engineering and Control Systems

(a) (i) The meaning of marine engineering terms in common use.

(ii) A general knowledge of diesel and turbine machinery, marine boilers, generators, pumps, condensers and evaporators.
Transmission of main engine power.
Steering systems.
Manoeuvring procedures.

(iii) Fuel consumption and economical speeds; relationship between power, speed, displacement and consumption; estimated consumption to complete a passege. Problems involving pitch and slip.

(b) An understanding of marine applications of the properties of gases. Systems for the carriage of refrigerated cargoes and of liquefied gases.

(c) 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 elsewhere. Tank and draught gauges. Stabilizers.

(d) Fire detection and extinction systems and procedures; general principles and practical application; capabilities and limitations of the various systems.

(e) Pollution. The prevention of pollution.

Paper 6 (2½ hours) Navigation and Paper 7 (2½ hours) Passage Planning

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 show their ability to make full use of all the navigational and meteorological information which is available to a ship's Master.

1. (a) Voyage planning. The selection of ocean routes. Shore-based weather routeing and self-routeing. Use of prognostic surface weather and wave charts. Use of current atlases and other charts and navigational publications relevant to ocean navigation.

(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.

2. (a) The optimum course and speed for two ships wishing to rendezvous for any purpose.

(b) Search and rescue operations.

(c) Navigational procedures when approaching off-shore installations, and when working with helicopters or small craft.

(d) Navigation in extreme weather conditions.

(e) Navigation in the vicinity of and the rules for avoiding tropical storms. Reports to be made under international conventions.

(f) Navigation in the vicinity of ice. Reports to be made under international conventions.

3. Bridge procedures at sea, in harbour, and whilst berthing or anchoring.

Paper 8 (3 hours) Navigation Instrumentation

(a) The use and understanding of aids to navigation, including all those radio and electronic aids which are installed in a high proportion of merchant ships. Questions will be directed towards ensuring that candidates have a proper understanding of the essential principles and operation of these aids and can make full use of their capabilities whilst appreciating their limitations.

(b) The interpretation and use of navigation and meteorological information.

(c) The interpretation and use of information from navigational aids, including the use of radar in collision avoidance.

(d) The effects of systematic and random errors in position fixing by any method.

(e) Advantages and disadvantages of various navigation systems and methods; considerations underlying the choice of navigational systems for differing trades and geographical regions.

(f) The construction, siting, care and maintenance of the magnetic compass and associated equipment. Causes of Devi tion, 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.

(g) Principles of the gyro compass. Errors associated with the gyro compass, including latitude, course and speed error and correction; ballastic deflection and its relation to change of speed error; rolling error and how it is minimized. The principal parts of a gyro compass; fundamental differences in the construction and operation of the better known gyro compasses.

(h) Principles of operation and use of gyro and transmitting magnetic compasses, repeater systems automatic pilot, projector compasses, rate of turn indicators.

(i) Principle and practical application of echo sounding devices, logs and speed indicators.

(j) An outline knowledge of recent developments in navigational aids.

Paper 9 (3 hours) Ship's Stability

(a) Determination of the position of the centre of gravity of a ship for different conditions of loading and ballasting. The effect on the position of the centre of gravity of adding, removing, shifting or suspending weights. To determine the virtual rise in the position of the centre of gravity due to slack tanks. Transverse and longitudinal metacentres, metacentric height. Initial stability and its limitation to small angles of inclination. Changes in stability during a voyage. Effects of a shift of cargo or solid ballast. Stiff and tender ships.

(b) Change of trim and draught due to: loading, discharging and shifting weights. Effects of list and trim on stability. Stability and trim when drydocking.

(c) 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.

(d) Dangers to a ship with a heavy list. Precautions when righting. Deck cargoes, homogeneous cargo and cargo liable to shift. Ballasting for stability consideration. The effect of beam and freeboard on stability.

(e) The inclining experiment. A comprehensive knowledge of the hydrostatic, stability and stress data supplied to ships.

(f) An understanding of the factors affecting the shape of a curve of statical stability and the significance of the area under the curve, including its calculation. Use of simplified stability data. Grain shift moments.

(g) Principles of damage control. Arrangements for restricting the spread of fire in superstructures.

(h) Requirements of the Load Line Rules, period and conditions of validity of certificate, an understanding of those aspects of the conditions of assignment which affect the stability and seaworthiness of a ship.

(i) Permeability of a compartment. The effect of bilging and flooding (end or midship's compartment, on or off the centre-line).

(j) Shallow water effect. Ship to ship and ship to shore interaction. The training circle. Angle of heel when turning; effect on stability.

(k) Loadline marks; calculations involving their use.

(l) Modern methods of determining the effect of different conditions of loading and ballasting on the ship's structure. Methods of compensating for discontinuity of strength, local and special stiffening.

(m) Torsional stress.

ORAL

(a) (i) The handling of heavy weights with special reference to type and strength of gear used.

(ii) The use and care of all deck and above 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 second anchor.
Clearing a foul anchor and hawse.
Mooring.
Hanging off an anchor.
Breaking and slipping cables.
Getting under way.
To carry out an anchor with boats.

(c) (i) Effect of current, wind, shallows and draught on manoeuvering. Manoeuvering in rivers and harbours. Berting alongside and leaving quays and oil terminals with or without the use of tugs.

(ii) Management of ships in heavy water. Means to employ to keep a disabled or unmanageable ship out of the trough of the sea and to lessen the lee drift.

Handling a disabled ship.
Extra precations to be taken before the onset of heavy weather.

(d) (i) Knowledge of the regulations concerning life saving and fire fighting appliances.

(ii) Measures to be taken following accidental damage including collision, grounding, heavy weather damage leaks.
Methods of dealing with fire on board ship. The organisation and direction of fire fighting, lifeboat and lifecraft preparation parties.

(iii) A thorough knowledge of search and rescue procedures.

(iv) Preparation for drydocking and undocking. Use of shores, bilge blocks and bilge shores.

(v) Measures to be taken to prevent the spillage of oil during cargo work, bunkering or oil transfer.

(e) (i) A full knowledge of the current and application of the Collision Regulations and of those Annexes concerned with safe navigation.

(ii) Distress and pilot signals; penalties for misuse.

(iii) A knowledge of the contents and use of 'Notices to Mariners'.

(iv) IALA systems of buoyage.

(v) Code of Safe Working Practices for the Safety of Merchant Seamen.

SIGNALS

(a) To send and receive signals in:
(i) Morse code by flash lamp up to six words per minute.
(ii) International Code of Signals.

(b) (For candidates without ENS certificate). The practical use of shipborne radio direction finders, knowledge of the functions, characteristics and methods of using special types of radio beacons, for example, rotating beacons and directional beacons.

(c) Procedures for emergency signalling by wireless telegraphy.

THIRD SCHEDULE

Regulation 3

EXAMINATION FOR CERTIFICATE OF COMPETENCY AS MASTER

ORAL

Candidates are expected to secure a pass at a somewhat higher standard than 60%.

(a) (i) Exceptional circumstances. Loss of rudder and or/propeller Jury steering arrangements.

Action to be taken following collision or sustaing damage of any kind.

Action to be taken on grounding — methods of refloating, surveys subsequent to refloating.

Beaching a ship.

(ii) Steps to be taken when disabled and in distress.

Preservation of passengers and crew in the event of wreck.

Abandoning ship; survival procedure.

Abandoning a wrecked ship.

Communications with the shore.

The use of rockets and rocket apparatus.

(iii) Assisting a ship or aircraft in distress. The use od direction finding for homing on to a casualty.

Rescuing the passengers and crew of a disabled ship or ditched aircraft.

The launching of accident boats.

(iv) Bad weather manoeuvers.

Precautions at anchor and at sea.

Use of oil.

Anchoring and working anchors and cables in all circumstances.

Approaching rivers and harbours and manoeuvering therein.

Approaching off-shore loading points under open sea conditions.

(v) Towing and being towed.

(vi) Navigation in the vicinity of ice.

(vii) Drydocking.

General procedure and precautions to be observed.

Distribution of weight.

Drydocking with full cargo for inspection of propellers and shafting.

Bilge blocks.

Leaving a ship waterborne.

Putting into port with damage to ship and/or cargo, both from business and technical points of view.

Safeguarding a cargo.

(viii) Prevention of fire at sea and in port.

Methods used to prevent the spread of fire.

Full knowledge of the use of fire appliances and the precautions to be taken in their use.

(ix) Methods of pest control; fumigation of holds and living spaces; safeguards in applying various methods.

(x) A knowledge of personnel management, organisation and training abroad ships.

Crew representation.

Complaints procedure.

Routine inspections of living quarters and store rooms.

(ix) Compensation and adjustment of compasses; candidates will be questioned on the practical adjustment of the magnetic compass using a ship's binnacle and compass.

(b) A full knowledge of the content and application of the Collision Regulations and of those Annexes concerned with safe navigation. (Candidates will not be placed in the position of handling a sailing craft, but will be expected to recognise the lights carried by such a craft and to have a knowledge of her possible manouvers according to the direction of the wind).
Distress and pilot signals; penalties for misuse.
A knowledge of the contents and use of DTp 'Merchant Shipping Notices' and Admiralty 'Notice to Mariners'.
IALA Systems of buoyage.
Code of Safe Working Practices for the Safety of Merchant Seamen.

(c) Port Radio Information Services. Knowledge of the types sevices available to avoid vessles entering ports and brething.

FOURTH SCHEDULE

Regulation 3

Additional Qualifications
Required in terms of paragraph (e) of regulation 3

Additional Qualifications	Grade of Certificate		
	Master	First-mate	Second-mate
Radiotelephony (Restricted)	x	x	x
Electronic Navigational Aids			x
Navigational Control Course	x	x	
First Aid at Sea			x
Ship Captain's Medical Training	x	x	
Efficient Deck Hand	x	x	x
Efficient Lifeboatman*	x	x	x
Fire Fighting Course	x	x	x

* Certificate of Proficiency in Survival Craft may substitute the Efficient Lifeboatman".

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