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GOEWERMENSKENNISGEWING.

DEPARTEMENT VAN VERVOER.

No. R. 176.] [9 Februarie 1968.

DIE EKSAMENREGULASIES VIR GESAGVOER- DERS EN NAVIGASIE-OFFISIERS, 1968.

Die Minister van Vervoer het, kragtens die bepalings van artikel 356 (1) van die Handelskeepvaartwet, 1951 (Wet No. 57 van 1951), soos gewysig, die Regulasies in verband met eksamens vir Gesagvoerders en Navigasie-offisiere, 1960, soos afgekondig by Goewermentskennisgewing No. R. 118 gedateer 22 Januarie 1960 en gewysig by Goewermentskennisgewing No. R. 1323 gedateer 2 September 1960, herroep en kragtens genoemde artikel die regulasies in die Bylae hiervan uitgevaardig met ingang in beide gevalle, vanaf 23 Februarie 1968.

BYLAE.

INHOUDSOPGAWE.

HOOFSTUK I. ALGEMEEN.

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A—23773

GOVERNMENT NOTICE.

DEPARTMENT OF TRANSPORT.

No. R. 176.] [9 February 1968.

THE EXAMINATION REGULATIONS FOR MASTERS AND NAVIGATING OFFICERS, 1968.

The Minister of Transport has, under the provisions of section 356 (1) of the Merchant Shipping Act, 1951 (Act No. 57 of 1951), as amended, repealed the Examination Regulations for Masters and Navigating Officers, 1960, promulgated by Government Notice No. R. 118 dated 22 January 1960 as amended by Government Notice No. R. 1323 dated 2 September 1960 and has, in terms of the said section, made the regulations contained in the Schedule hereto, with effect in each case from 23 February 1968.

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HOOFSTUK I.

ALGEMEEN.

Titel van Hierdie Regulasies.

1. Hierdie regulasies heet die Eksamenregulasies vir Gesagvoerders en Navigasie-offisiere, 1968.

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CHAPTER I.

GENERAL.

Title of These Regulations.

1. These regulations are called the Examination Regulations for Masters and Navigating Officers, 1968.

**Vertolking.*

2. In hierdie regulasies beteken die uitdrukking „die Wet” die Handelskeepvaartwet, 1951 (Wet No. 57 van 1951), en tensy die samehang anders aandui, het enige uitdrukking wat in hierdie regulasies gebruik word en waarvoor in die Wet ’n betekenis aangegee is, die aldus aangegewe betekenis, en beteken—

„eksaminator” die persoon wat kragtens artikel 77 (4) van die Wet as sodanige aangestel is;

„lang seereis” ’n seereis waarin die uiterste hawens wat die skip in die loop van die seereis besoek, minstens 500 myl uit mekaar is;

„kort seereis” ’n seereis waarin die uiterste hawens wat die skip in die loop van die seereis besoek, minder as 500 myl uit mekaar is.

Oorweging van Twyfelagtige Gevalle.

3. In alle gevalle van onsekerheid oor die toepassing of vertolking van hierdie regulasies of in die geval van onsekerheid oor die aanvaarbaarheid van ’n kandidaat se diens- of ander kwalifikasies vir ’n bekwaamheidsertifikaat of vir sy toelating tot ’n eksamen vir so ’n sertifikaat moet die saak, indien dit na die Sekretaris verwys word, deur laasgenoemde uitgemaak word en is dié se beslissing finaal.

Plekke waar Eksamens Afgeneem word.

4. Eksamens, met inbegrip van gesigstoetse vir kleur en vorm, moet in Kaapstad en Durban afgeneem word op tydstippe wat van die bevoegde beampte vasgestel is; met dien verstande dat van tyd tot tyd spesiale reëlins getref kan word om sodanige eksamens elders as in Kaapstad en Durban af te neem.

Aansoekvorm.

5. ’n Eksamenkandidaat vir ’n bekwaamheidsertifikaat moet vorm T.V. 5/101, soos in Aanhangsel 1 uiteengesit, invul.

Ander Dokumente wat Ingedien moet word.

6. (1) ’n Kandidaat vir ’n ander bekwaamheidsertifikaat dan as Gesagvoerder van ’n skip op vreemde vaart—Spesiale Graad—moet seker maak dat die vorm vermeld in regulasie 5, vergesel van sy—

(a) geboortesertifikaat of ander aanneemlike ouderdomsbewys;

(b) verslagboek of ander dokumentêre bewys van bekwaamende diens;

(c) eerstehulpertifikaat;

(d) getuigskrifte; en

(e) waghousertifikate.

by die kantoor van die eksaminator by die hawe waar die kandidaat geëksamineer wil word, ingelewer word of gepos word om genoemde eksaminator te bereik minstens 14 dae voor die datum waarop die kandidaat geëksamineer wil word, of dat vermeldde dokumente ingelewer word of gepos word sodat hulle die bevoegde beampte by enige hawe

*Vir die toepassing van hierdie regulasies het die Minister die volgende beamptes as „bevoegde beamptes” in die Republiek aangewys:—

Te Kaapstad, Durban, Port Elizabeth, Walvisbaai, en Saldanha-baai: Die Eerste Beampte van die Marine-afdeling.

Te Oos-Londen, Mosselbaai, Port Nolloth en Luderitz: Die Koopvaardymeester.

(L.W.—Voorbeelde van eksamen vraestelle kan verkry word deur aansoek te doen by die Sekretaris van Vervoer, Privaatsak 193, Pretoria, of die Eerste Beampte van die Marine-afdeling te Kaapstad, Durban, Port Elizabeth, Walvisbaai of Saldanha-baai of die Koopvaardymeester te Oos-Londen, Mosselbaai, Port Nolloth of Luderitz.)

** Interpretation.*

2. In these regulations the expression “the Act” means the Merchant Shipping Act, 1951 (Act No. 57 of 1951), and unless the context otherwise indicates, any expression used in these regulations to which a meaning has been assigned in the Act, bears the meaning so assigned, and—

“examiner” means the person appointed as such in terms of section 77 (4) of the Act;

“long voyage” means a voyage in which the distance between the extreme ports visited by the ship in the course of the voyage is not less than 500 miles;

“short voyage” means a voyage in which the distance between the extreme ports visited by the ship in the course of the voyage is less than 500 miles.

Consideration of Doubtful Cases.

3. In all cases of doubt as to the application of interpretation of these regulations, or, if any doubt arises as to the acceptance of the service or other qualifications of any candidate for a certificate of competency or for his admission to an examination for such a certificate, the matter shall, if referred to the Secretary, be decided by him and his decision shall be final.

Places of Examination.

4. Examinations, including colour and form vision tests, shall be held at Cape Town and Durban at such times as may be ascertained from the proper officer: Provided that special arrangements may be made from time to time for such examinations to be held at places other than Cape Town and Durban.

Form of Application.

5. A candidate for examination for a certificate of competency shall complete the form TV. 5/101 set forth in Annex 1.

Other Documents to be Submitted.

6. (1) A candidate for a certificate of competency other than as Master of a foreign-going ship—Special Grade, shall ensure that the form mentioned in regulation 5 accompanied by his—

(a) birth certificate, or other acceptable proof of age;

(b) record book or other documentary proof of qualifying service;

(c) first-aid certificate;

(d) testimonials; and

(e) watch-keeping certificates,

is handed in at the office of, or posted so as to reach, the examiner at the port at which the candidate wishes to be examined at least 14 days before the date on which he wishes to be examined, or is handed in at the office of, or posted so as to reach the proper officer at any port at

*For the purposes of these regulations, the Minister has designated the following officers as “proper officers” in the Republic:—

At Cape Town, Durban, Port Elizabeth, Walvis Bay and Saldanha Bay: The Principal Officer of the Marine Division;

At East London, Mossel Bay, Port Nolloth and Luderitz: The Shipping Master.

(N.B.—Specimen examination papers may be obtained on application to the Secretary for Transport, Private Bag 193, Pretoria, or the Principal Officer of the Marine Division at Cape Town, Durban, Port Elizabeth, Walvis Bay or Saldanha Bay or the Shipping Master at East London, Mossel Bay, Port Nolloth or Luderitz.)

minstens 21 dae voor die datum van die eksamen bereik: Met dien verstande dat die eksaminator die kandidaat kan toelaat om eksamen te doen al word vermeldde dokumente ook later ingelewer of gepos as wat by hierdie regulasie bepaal word.

(2) Indien 'n kandidaat in besit is van 'n geldige bekwaamheid- of dienssertifikaat, moet hy sodanige sertifikaat aan die eksaminator oorhandig alvorens hy toegelaat word om die eksamen te doen.

Getuigskrifte.

7. (1) 'n Kandidaat vir 'n ander bekwaamheidsertifikaat as dié van Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—moet in verband met inbors, met inbegrip van matigheid, ervaring, bekwaamheid en algemene goeie gedrag op 'n skip, getuigskrifte oorlê waarmee die eksaminator tevrede is en sodanige getuigskrifte moet behoudens die bepalinge van regulasie 14 die laaste 12 maande bekwaamende diens onmiddellik voor die datum van aansoek dek.

(2) Getuigskrifte moet geteken wees deur die skeepsgesagvoerder onder wie die diens verrig is, of, indien die gesagvoerder nie beskikbaar is nie, deur die eienaar van die skip of sy verteenwoordiger.

(3) Indien 'n kandidaat effens hardhorend is of aan 'n ander liggaamsgebrek ly wat van so 'n aard is dat dit die behoorlike vervulling van sy pligte as 'n navigasie-offisier op waghoude kan belemmer, moet in sy getuigskrifte vermeld word of die gebrek inderdaad die behoorlike vervulling van die kandidaat se pligte op enige wyse belemmer het.

Doofheid en ander Liggaams- of Geestesgebreke.

8. (1) Indien die eksaminator in die loop van 'n eksamen vind dat 'n kandidaat doof is of 'n spraakgebrek het of aan die een of ander liggaamlike of geestelike swakheid ly en sodanige eksaminator daarvan oortuig is dat die mate van doofheid of gebrek of ander swakheid sodanig is dat dit die kandidaat onbekwaam maak vir die vervulling van die gewone pligte van die skeepsrang wat die sertifikaat waarvoor hy geëksamineer word, hom die reg sou gee om te beklee, moet hy die kandidaat, indien dié dit verlang, toelaat om die eksamen te voltooi en die saak aan die Sekretaris rapporteer met die oog op sodanige stappe as wat laasgenoemde nodig ag.

(2) Ongeag die bepalinge van hierdie regulasies mag 'n vorm T.V. 5/106 of 'n bekwaamheidsertifikaat nie uitgereik word aan 'n kandidaat wat in subregulasie (1) vermeld word en die eksamen deurgekom het nie; met dien verstande dat 'n bekwaamheidsertifikaat uitgereik kan word aan 'n kandidaat wat na slagting in die eksamen aan die Sekretaris bevredigende bewys lewer dat sy gehoor, spraak of liggaamlike of geestelike toestand verbeter het of normaal is.

Diens Onvoldoende Bevind.

9. (1) Indien 'n kandidaat die eksamen deurgekom het en daarna ontdek word dat sy diens onvoldoende is om hom geregtig te maak tot die ontvangs van 'n bekwaamheidsertifikaat van die graad waarvoor hy geslaag het, mag die sertifikaat behoudens die bepalinge van hierdie regulasie nie aan hom toegeken word nie.

(2) Indien die Sekretaris nie daarvan oortuig is dat die fout in die berekening van die kandidaat se diens deur die fout van of deur opsetlike wanvoorstelling deur die kandidaat veroorsaak is nie, moet die sertifikaat teruggehou word tot tyd en wyl bevredigende bewys gelewer is dat al die nodige diens voltooi is en daarna moet die sertifikaat behoudens die bepalinge van hierdie regulasies aan die kandidaat uitgereik word.

least 21 days before the date of the examination: Provided that the examiner may allow the candidate to sit even if the said documents are handed in or posted later than is required by this regulation.

(2) If a candidate is in possession of a valid certificate of competency or service he shall, before being admitted to the examination, hand in such certificate to the examiner.

Testimonials.

7. (1) A candidate for a certificate of competency other than Master of a foreign-going ship—Special Grade, shall produce testimonials satisfactory to the examiner as to character, including sobriety, experience, ability and general good conduct on board ship, and such testimonials shall, subject to the provisions of regulation 14, cover the last 12 months of qualifying service immediately preceding the date of application.

(2) Testimonials shall be signed by the master of the ship under whom the service was performed, or, if the master is not available, by the owner of the ship or his representative.

(3) If a candidate is somewhat hard of hearing or suffers from any other physical defect of such a nature that it might interfere with the proper performance of his duties as a navigating officer on watch, it shall be stated in his testimonials whether the defect did in fact interfere in any way with the proper performance of the candidate's duties.

Deafness and Other Physical or Mental Disabilities.

8. (1) If during the progress of an examination the examiner finds that a candidate is deaf, or has an impediment in his speech, or suffers from some other physical or mental infirmity, and is satisfied that the degree of deafness or the impediment or other infirmity is such as to render the candidate incompetent to discharge the ordinary duties of the station on a ship which the certificate for which the candidate is being examined would entitle him to hold, he shall if the candidate so desires, allow him to complete the examination and shall report the matter to the Secretary for such action as he may deem necessary.

(2) Notwithstanding the provisions of these regulations, a form TV 5/106 or a certificate of competency shall not be issued to a candidate referred to in subregulation (1) who has passed the examination: Provided that a certificate of competency may be issued to a candidate who, after having passed the examination, produces satisfactory evidence to the Secretary to the effect that his hearing, speech or physical or mental condition has improved or is normal.

Service Found to be Insufficient.

9. (1) If, after a candidate has passed the examination, it is discovered that his service is insufficient to entitle him to receive a certificate of competency of the grade for which he has passed, the certificate shall not, subject to the provisions of this regulation, be granted to him.

(2) If the Secretary is not satisfied that the error in the calculation of the candidate's service occurred through the fault of or through wilful misrepresentation by the candidate, the certificate shall be withheld pending the production of satisfactory proof that the necessary service has been completed in full, upon which the certificate shall, subject to the provisions of these regulations, be issued to him.

(3) As die Sekretaris daarvan oortuig is dat die fout opsetlik gemaak is, moet die sertifikaat teruggehou word tot tyd en wyl die kandidaat al die nodige bekwaamende diens en ook sodanige verdere diens as wat die Sekretaris bepaal, voltooi, weer die toepaslike bedrag betaal en weer die eksamen deurgekom het.

(4) Addisionele diens wat ooreenkomstig subregulasie (3) deur die kandidaat gelewer is, geld nie as bekwaamende diens vir 'n ander sertifikaat nie.

Afskrifte van Verlore Sertifikaat.

10. Die aanvrager van 'n gewaarmerkte afskrif van 'n verlore sertifikaat, ongeag of dit 'n bekwaamheid- of 'n dienssertifikaat is, moet die aansoekvorm T.V. 5/103, soos uiteengesit in Aanhangsel 1, met verstrekking van die nodige besonderhede invul, sodanige aansoek aan die bevoegde beampte oorhandig en terselfdertyd die bedrag van R2 betaal. Die applikant moet voor die bevoegde beampte 'n verklaring doen oor die omstandighede waarin die sertifikaat verloor is en sodanige beampte moet die aansoek aan die Sekretaris deurstuur.

Geen betaling word gevorder as die applikant bewys lewer dat die sertifikaat as gevolg van skipbreuk of 'n brand aan boord verloor is nie.

Eerstehulpertifikaat.

11. (1) Geen kandidaat, uitgesonderd 'n kandidaat vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—mag vir 'n bekwaamheidsertifikaat geëksamineer word alvorens hy 'n sertifikaat toon wat deur 'n mediese praktisyn, liggaam of vereniging goedgekeur deur die Sekretaris, uitgereik is en aandui dat hy in 'n eksamen in Eerstehulp aan beseerdes geslaag het nie.

(2) Die kandidaat moet die sertifikaat verkry het toe hy 16 jaar of ouer was en hy moet die eksamen daarvoor hoogstens 3 jaar voor die datum van die eksamen vir die bekwaamheidsertifikaat deurgekom het.

Sertifikaat as Radarwaarnemer op Handelskepe.

12. (1) 'n Sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart of Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton mag nie aan 'n kandidaat vir so 'n sertifikaat uitgereik word alvorens hy 'n sertifikaat as radarwaarnemer op handelskepe in 'n vorm goedgekeur deur die Sekretaris toon nie.

(2) Van die tyd bestee aan bywoning van 'n radarwaarnemerskursus goedgekeur deur die Sekretaris kan hoogstens 'n week vir die toepassing van regulasies 15 en 17 as bekwaamende diens geld; met dien verstande dat die kwytskelding kragtens hierdie subregulasie plus kwytskeldings kragtens regulasies 31 en 33 nie 15 maande te bowe mag gaan nie.

(3) 'n Kandidaat wat voornemens is om die radarwaarnemerskursus te volg nadat hy die eksamen vir die bekwaamheidsertifikaat deurgekom het, kan die kwytskelding waarvan in subregulasie (2) melding gemaak word, vooruit vir toelating tot die eksamen vir die bekwaamheidsertifikaat as bekwaamende diens in berekening bring.

(4) 'n Sertifikaat as Radarwaarnemer op Handelskepe word vir die toepassing van hierdie regulasie as geldig beskou indien hy verwerf is na 2 jaar bekwaamende diens op kusvaarders of op skepe op vreemde vaart, welke bekwaamende diens ooreenkomstig hierdie regulasies bereken moet word.

(3) If the Secretary is satisfied that the error was deliberately made, the certificate shall be withheld until the candidate has completed the necessary qualifying service in full and has performed such further period of service as may be decided by the Secretary, has again paid the appropriate fee and has again passed the examination.

(4) Any additional service performed by a candidate in terms of subregulation (3) shall not count as qualifying service for any other certificate.

Copies of Lost Certificates.

10. An applicant for a certified copy of a lost certificate, whether of competency or of service, shall complete the form of application T.V. 5/103 set forth in Annex 1, giving the necessary particulars, and shall hand it to the proper officer, paying at the same time the fee of R2. A declaration as to the circumstances in which the certificate was lost shall be made by the applicant before the proper officer, who shall transmit the form of application to the Secretary.

No fee is chargeable if the applicant shows that the certificate was lost through shipwreck or fire on board ship.

First-aid Certificates.

11. (1) No candidate, other than a candidate for a certificate of competency as Master of a foreign-going ship—Special Grade, shall be examined for a certificate of competency until he produces a certificate issued by a medical practitioner, body or association approved by the Secretary, to the effect that he has passed an examination in First-aid to the injured.

(2) The certificate shall have been obtained by the candidate when 16 years of age or more, and the examination for it shall have been passed not more than 3 years before the date of the examination for the certificate of competency.

Certificate as Radar Observer in Merchant Ships.

12. (1) No candidate for a certificate of competency as Second Navigating Officer of a foreign-going ship or Navigating Officer of a coasting ship of 100 or more gross register tons, shall be issued with a certificate of competency until he produces a certificate as Radar Observer in merchant ships in a form approved by the Secretary.

(2) A maximum of 1 week shall be allowed to count as qualifying service for the purpose of regulations 15 and 17 in respect of attendance at a radar observer course approved by the Secretary: Provided that the remission under this subregulation plus any remissions under regulations 31 and 33 shall not exceed 15 months.

(3) A candidate who intends to take the radar observer course after he has passed the examination for the certificate of competency may anticipate the remission referred to in subregulation (2) when qualifying service is assessed for the purpose of admission to the examination for the certificate of competency.

(4) A certificate as Radar Observer in merchant ships shall be regarded as valid for the purposes of this regulation if obtained after the completion of 2 years' qualifying service, either in coasting ships or foreign-going ships, reckoned in accordance with the provisions of these regulations.

Gesigstoetse vir Kleur en Vorm.

13. (1) 'n Kandidaat vir 'n bekwaamheidsertifikaat, uitgesonderd dié van Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—moet die voorgeskrewe gesigstoetse vir kleur en vorm uiteengesit in Aanhangsel 2 deurkom alvorens 'n bekwaamheidsertifikaat aan hom uitgereik word; met dien verstande dat 'n kandidaat wat reeds die houer is van 'n bekwaamheidsertifikaat ten opsigte van 'n dekhoedanigheid, nie weer die lanterntoets hoef af te lê nie.

(2) Indien 'n kandidaat een of albei dele van die gesigstoetse vir kleur en vorm nie deurkom nie maar in die skriftelike en mondelinge dele van die eksamen vir die bekwaamheidsertifikaat slaag, moet die eksaminator die saak aan die Sekretaris rapporteer met die oog op sodanige stappe as wat laasgenoemde nodig ag.

(3) 'n Sertifikaat dat 'n kandidaat in die voorgeskrewe gesigstoetse vir kleur en vorm geslaag het, geld net 6 maande.

(4) Iemand wat die gesigstoetse vir kleur en vorm wil aflê, moet op vorm T.V. 5/104 uiteengesit in Aanhangsel 1 by die bevoegde beampte aansoek doen en 'n bedrag van 50 sent betaal; met dien verstande dat geen afsonderlike gelde vir sodanige toetse betaal word indien hulle terselfdertyd as die eksamen vir die bekwaamheidsertifikaat afgelê word nie.

Wangedrag van Kandidate.

14. (1) In die geval van 'n kandidaat wat—

(a) na ondertekening van die ooreenkoms met die bemanning nagelaat het om hom by sy skip aan te meld; of

(b) van sy skip gedros het nadat hy hom daar aangemeld het; of

(c) deur 'n wettige regsprekende liggaam skuldig bevind is aan 'n misdryf waarvoor hy tot gevangenisstraf sonder boete as keuse gevonnissen is of wat na die oordeel van die eksaminator van 'n ernstige aard is; of

(d) skuldig bevind is aan 'n misdryf ten opsigte waarvan ooreenkomstig artikel 183 (b) van die Wet 'n inskrywing in die amptelike skeepsjournaal aangebring en wat na die mening van die eksaminator van 'n ernstige aard is,

moet die getuigskrifte wat by regulasie 7 vereis word, die tydperk van 2 jaar na sodanige wangedrag dek; met dien verstande dat die Sekretaris die tydperk na eie oordeel op versoek van die kandidaat kan verkort nadat hy die saak ondersoek het.

(2) Indien ooit aan die Sekretaris gerapporteer word dat 'n kandidaat 'n eksaminator of iemand anders wat kragtens die Wet werksaam is, 'n som geld of iets anders hoegenaamd aangebied het met die doel om hom op enige wyse met betrekking tot 'n eksamen te beïnvloed, moet die Sekretaris na die saak ondersoek instel en indien hy daarvan oortuig is dat die kandidaat so 'n aanbod vir vermelde doel gedoen het, kan hy weier om toe te laat dat die kandidaat geëksamineer word of, indien die eksamen reeds begin het, kan hy die eksaminator gelas om nie met die eksamen voort te gaan nie, of, indien die eksamen reeds voltooi is, kan hy die uitslag daarvan nietig verklaar, en hy kan geld wat deur die kandidaat betaal is, verbeurd verklaar en weier om toe te laat dat sodanige kandidaat hom binne 'n tydperk van hoogstens 12 maande met ingang van die datum waarop sodanige aanbod gedoen is, vir 'n eksamen in die Republiek aanmeld.

Colour and Form Vision Tests.

13. (1) A candidate for a certificate of competency, other than Master of a foreign-going ship—Special Grade, shall pass the prescribed colour and form vision tests set out in Annex 2 before a certificate of competency is issued to him: Provided that a candidate who already holds a certificate of competency in respect of a deck capacity, shall not again be required to be examined in the lantern test.

(2) If a candidate fails in either or both parts of the colour and form vision tests, but passes the written and oral parts of the examination for the certificate of competency, the examiner shall report the matter to the Secretary for such action as he may deem necessary.

(3) A certificate of a pass in the prescribed colour and form vision tests shall be valid for 6 months only.

(4) Any person who wishes to undergo the colour and form vision tests shall make application on the form T.V. 5/104 set forth in Annex 1 to the proper officer and shall pay a fee of 50 cents: Provided that when such tests are undertaken at the same time as the examination for a certificate of competency, no separate fee shall be paid for such tests.

Misconduct by Candidates.

14. (1) In the case of a candidate who—

(a) after having signed the agreement with the crew, has neglected to join his ship; or

(b) after having joined, has deserted his ship; or

(c) has been convicted by a legal tribunal of an offence for which he has been sentenced to imprisonment without the option of a fine or which the examiner considers to be of a serious nature or;

(d) has been found guilty of an offence in respect of which an entry has been made in the official logbook in terms of section 183 (b) of the Act and which the examiner considers to be of a serious nature,

the testimonials required in terms of regulation 7 shall cover the period of 2 years subsequent to such misconduct: Provided that upon the application of the candidate, the Secretary, after having investigated the matter, may in his discretion reduce the period.

(2) If at any time it is reported to the Secretary that a candidate has offered any sum of money or other thing whatsoever to any examiner or any other person employed under the Act for the purpose of influencing him in any manner in relation to an examination, the Secretary shall enquire into the matter, and if he is satisfied that the candidate has made such an offer for the said purpose, he may refuse to permit the candidate to be examined or, if the examination has already commenced, may direct the examiner not to proceed with the examination, or, if the examination has already been completed, may cancel the result thereof, and may order the forfeiture of any fee paid by the candidate, and may refuse to allow him to present himself at any future examination in the Republic for a period not exceeding 12 months from the date of the making of such offer.

HOOFSTUK II.

OUDERDOMSGRENSE EN VEREISTE KWALIFIKASIES VIR BEKWAAMHEIDCERTIFIKATE.

Navigasie-offisier van 'n Kusvaarder van 100 of meer Bruto Registerton.

15. Die kandidaat moet behoudens die bepalings van regulasie 30 minstens 20 jaar oud wees en hy moet diens gedoen het wat gelyk is aan minstens 4 jaar diens op dek.

Gesagvoerder van Kusvaarder van 100 of meer Bruto Registerton.

16. Die kandidaat moet minstens 21 jaar oud wees en minstens die volgende diens agter die rug hê—

(a) 1 jaar in 'n hoedanigheid wat nie laer is as dié van Eerste Navigasie-offisier van 'n skip wat kort seereise aflê nie; of

(b) 1½ jaar in 'n hoedanigheid wat nie laer is as dié van Tweede Navigasie-offisier in bevel van 'n wag op 'n skip wat kort seereise aflê nie; of

(c) 1½ jaar in 'n hoedanigheid wat nie laer is as dié van Derde Navigasie-offisier in bevel van 'n wag op 'n skip wat lang seereise aflê nie; of

(d) 2½ jaar in 'n hoedanigheid wat nie laer is as dié van Derde Navigasie-offisier in bevel van 'n wag op 'n skip wat kort seereise aflê nie.

terwyl hy in besit was van 'n geldige bekwaamheidsertifikaat nie laer nie as dié van Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.

Tweede Navigasie-offisier van 'n Skip op Vreemde Vaart.

17. Die kandidaat moet behoudens die bepalings van regulasie 30 minstens 20 jaar oud wees en hy moet diens gedoen het wat gelyk is aan minstens 4 jaar diens op dek op 'n skip wat lang seereise onderneem.

Hoofnavigasie-offisier van 'n Skip op Vreemde Vaart.

18. Die kandidaat moet minstens 21 jaar oud wees en minstens 12 maande gedien het as offisier in bevel van 'n wag op 'n skip wat lang seereise onderneem terwyl hy in besit was van 'n geldige sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart.

Gesagvoerder van 'n Skip op Vreemde Vaart.

19. Die kandidaat moet minstens 23 jaar oud wees en die volgende diens agter die rug hê:—

(a) Minstens 2 jaar as offisier in bevel van 'n wag op 'n skip wat langs seereise onderneem, terwyl hy in besit was van 'n geldige bekwaamheidsertifikaat nie laer nie as dié van Tweede Navigasie-offisier van 'n skip op vreemde vaart; en

(b) minstens 18 maande as offisier in bevel van 'n wag op 'n skip wat lang seereise onderneem, of gelykwaardige diens soos by regulasie 23 voorgeskryf, terwyl hy in besit was van 'n geldige sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart.

*Gesagvoerder van 'n Skip op Vreemde Vaart—
Spesiale Graad.*

20. (1) Die kandidaat moet die houer wees van 'n geldige sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart.

(2) Diens bo en behalwe die diens wat hy vir sy sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart verrig het, word nie van die kandidaat vereis nie.

CHAPTER II.

AGE LIMITS AND QUALIFICATIONS REQUIRED FOR CERTIFICATES OF COMPETENCY.

Navigating Officer of a Coasting Ship of 100 or more Gross Register Tons.

15. The candidate shall be not less than 20 years of age except as provided for in regulation 30, and shall have the equivalent of at least 4 years' service on deck.

Master of a Coasting Ship of 100 or more Gross Register Tons.

16. The candidate shall be not less than 21 years of age, and shall have at least the following service:—

(a) One year in a capacity not lower than that of first navigating officer of a ship making short voyages; or

(b) One and a half years in a capacity not lower than that of second navigating officer in charge of a watch on a ship making short voyages; or

(c) one and a half years in a capacity not lower than that of third navigating officer in charge of a watch on a ship making long voyages; or

(d) two and a half years in a capacity not lower than that of third navigating officer in charge of a watch on a ship making short voyages,

whilst holding a valid certificate of competency not lower than that of Navigating Officer of a coasting ship of 100 or more gross register tons.

Second Navigating Officer of a Foreign-going Ship.

17. The candidate shall be not less than 20 years of age except as provided for in regulation 30, and shall have the equivalent of at least 4 years' service on deck in a ship making long voyages.

Chief Navigating Officer of a Foreign-going Ship.

18. The candidate shall be not less than 21 years of age, and shall have served at least 12 months as officer in charge of a watch on a ship making long voyages whilst holding a valid certificate of competency as Second Navigating Officer of a foreign-going ship.

Master of a Foreign-going Ship.

19. The candidate shall be not less than 23 years of age and shall have service as follows:—

(a) At least 2 years as officer in charge of a watch on a ship making long voyages whilst holding a valid certificate of competency not lower than that of Second Navigating Officer of a foreign-going ship; and

(b) at least 18 months as officer in charge of a watch on a ship making long voyages or equivalent service as prescribed by regulation 23 whilst holding a valid certificate of competency as Chief Navigating Officer of a foreign-going ship.

Master of a Foreign-going Ship—Special Grade.

20. (1) The candidate shall hold a valid certificate of competency as Master of a foreign-going ship.

(2) Service additional to the service which he performed for his certificate of competency as Master of a foreign-going ship, shall not be required of the candidate.

HOOFSTUK III.

HOE BEKWAMENDE DIENS BEREKEN WORD.

Algemeen.

21. (1) Die taak om aanneemlike bewys van bekwamende diens te lewer, rus in elke geval op die kandidaat wat op sodanige diens aanspraak maak.

(2) Bekwamende diens word bereken van die begin tot die einde van die seereis en moet behoudens die latere bepalinge hiervan in die dekdepartement verrig word.

(3) Behalwe in gevalle waar hierdie regulasies vir die aanvaarding van sekere tipes nie-handelskeepvaartdiens voorsiening maak, moet die bekwamende diens vir alle bekwamheidsertifikate uit diens op gewone handelskepe bestaan.

(4) Dit berus by die Sekretaris of diens waarvoor nie in hierdie regulasies voorsiening gemaak word nie, as bekwamende diens aanvaar word of nie.

(5) Die kandidaat se diens soos in sy ontslagsertifikate aangetoon word, word as kalendermaande bereken, d.w.s. die tyd tussen 'n bepaalde dag in 'n maand tot en met die vorige dag van die volgende maand. Die getal volle maande vanaf die begin van die tydperk moet op hierdie wyse bepaal en daarna moet die getal oorblywende dae getel word. Die dag waarop die ooreenkoms begin en die dag waarop hy eindig, moet albei ingereken word en alle oorblywende dae moet bymekaargetel en teen 30 dae per maand bereken word.

Aard en Tydperk van Diens word uit Ooreenkoms met Bemanning Vasgestel.

22. (1) Behoudens die bepalinge van subregulasie (2)—

(a) word diens nie geag bevoegdheid te verleen om vir 'n bekwamheidsertifikaat geëksamineer te word nie tensy dit geverifieer kan word uit die ooreenkoms met die bemanning van die skip waarin dit verrig is; en

(b) moet die ooreenkoms met die bemanning van die skip geraadpleeg en die verklaringe in daardie ooreenkoms as beslissend beskou word wanneer die diens waarop 'n kandidaat aanspraak maak as kwalifikasie vir die doen van 'n eksamen vir 'n bekwamheidsertifikaat nie met die inskrywings in sy seemansverslagboek strook nie of wanneer daar om 'n ander rede by die eksaminator onsekerheid bestaan oor die hoedanigheid of die tydperk waarin sulke diens verrig is.

(2) Waar diens verrig is op 'n skip wat nie kragtens 'n ooreenkoms met die bemanning behartig is nie, moet sodanige diens geverifieer word deur raadpleging van enige kontrak wat daar met betrekking tot sodanige diens tussen die kandidaat en die eienaar van die skip bestaan het, of van sodanige ander dokumentêre bewys van diens as wat die eksaminator bevredigend ag.

Deel van Tyd aan Lang en Kort Seereise Bestee wat Aanvaar mag word.

23. Behoudens die bepalinge van hierdie regulasies—

(a) moet die volle dienstyd op 'n skip wat lang of kort seereise onderneem, vir die toepassing van regulasie 15 aanvaar word;

(b) moet die volle dienstyd op 'n skip van 1,600 of meer bruto registerton wat kort seereise onderneem, vir die toepassing van regulasies 17 en 19 (b) aanvaar word; en

(c) moet dienstyd op 'n skip van minder as 1,600 bruto registerton wat kort seereise onderneem, vir die toepassing van regulasies 17 en 19 (b) beskou word as gelyk aan twee derdes van die dienstyd op 'n skip wat lang seereise onderneem.

CHAPTER III.

HOW QUALIFYING SERVICE IS CALCULATED.

General.

21. (1) In all cases the onus of producing acceptable proof of qualifying service shall rest upon the candidate claiming such service.

(2) Qualifying service shall be reckoned from the commencement of the voyage to its termination, and, except as hereinafter provided, shall be performed in the Deck Department.

(3) Except in cases where the acceptance of certain types of non-trading service is provided for by these regulations, the qualifying service for all certificates of competency shall be service performed in ordinary trading vessels.

(4) The acceptance as qualifying service, of service which is not provided for in these regulations, shall be decided by the Secretary.

(5) The candidate's service, as shown in his discharges, shall be reckoned by the calendar month, i.e. the time included between any given day in any month and the preceding day of the following month, both inclusive. The number of complete months from the commencement of the period, ascertained in this way, shall be computed, after which the number of odd days shall be counted. The day on which the agreement commences, as well as that on which it terminates, shall both be included, and all odd days added together and reckoned at 30 to the month.

Nature and Period of Service Determined by Reference to Agreement with the Crew.

22. (1) Subject to the provisions of subregulation (2)—

(a) service shall not be regarded as qualifying for examination for a certificate of competency, unless it can be verified by reference to the agreement with the crew of the ship in which it was performed; and

(b) whenever the service claimed by a candidate as a qualification for examination for a certificate of competency does not accord with the entries in his seaman's record book, or whenever for any other reason any doubt exists in the mind of the examiner as to the capacity in which or the period during which any such service was performed, reference shall be made to the agreement with the crew of the ship, and the statements contained in that agreement shall be regarded as decisive.

(2) In cases where service was performed in a ship which did not operate under an agreement with the crew, verification of such service shall be made by reference to whatever contract existed between the candidate and the owner of the ship governing such service, or to such other documentary evidence of service which the examiner regards as satisfactory.

What Proportion of Time Spent on Long and Short Voyages Respectively may be Accepted.

23. Subject to the provisions of these regulations—

(a) the whole of the time spent in service in a ship making long or short voyages shall be accepted for the purposes of regulation 15;

(b) the whole of the time spent in service in a ship of 1,600 or more gross register tons making short voyages shall be accepted for the purposes of regulations 17 and 19 (b); and

(c) time spent in service in a ship of less than 1,600 gross register tons making short voyages, shall for the purposes of regulations 17 and 19 (b) be regarded as equivalent to two-thirds of the time spent in service in a ship making long voyages.

Waghoudiens.

24. (1) In elke geval waar waghoudiens vereis word, moet die kandidaat deur voorlegging van sertifikate van waghoudiens in vorm T.V. 5/108, soos uiteengesit in Aanhangsel 1, of ander dokumente aanneemlik vir die eksaminator bewys dat hy gedurende die volle tydperk waarop hy aanspraak maak, minstens 8 uit elke 24 uur geëiste diens volle of effektiewe beheer oor 'n wag gehad het. So 'n sertifikaat van waghoudiens of ander dokument moet geteken wees deur die gesagvoerder van die skip waarop die kandidaat sodanige diens verrig het.

(2) Waar 'n kort seereis as voorafgaande aan of aan die einde van 'n lang seereis onderneem word, word die kort seereis in die geval van 'n kandidaat wat die hele tyd gedien het, met die oog op berekening van waghoudiens as deel van die lang seereis beskou.

(3) In die geval van 'n kandidaat wat op die kort seereis diens doen maar nie op die lang seereis nie, word die kort seereis behoudens die bepalinge van subregulasie (2) met die oog op die berekening van waghoudiens as deel van die lang seereis beskou; altyd met dien verstande dat die totale toelating vir een of meer sulke seereise in die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart nie 3 maande en in die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart nie 6 maande te bowe gaan nie.

(4) Waar 'n kandidaat vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart die waghoudiens uiteengesit in onderstaande paragrawe verrig het terwyl hy die houer van 'n sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart was, moet sodanige diens as volg bereken word:—

(a) Teen $1\frac{1}{2}$ maal werklike diens indien die kandidaat as eerste van 3 waghoud-offisiere op 'n skip wat langseereise onderneem, gedien het en in rang net na die gesagvoerder gekom het;

(b) teen $1\frac{1}{5}$ maal werklike diens indien die kandidaat as eerste van 3 waghoud-offisiere op 'n skip wat lang seereise onderneem, gedien het en nie net na die gesagvoerder in rang gekom het nie;

(c) teen $1\frac{1}{2}$ maal werklike diens indien die kandidaat op 'n skip wat lang seereise onderneem, as eerste van 2 waghoud-offisiere gedien het en die gesagvoerder nie 'n waghoud-offisier was nie;

(d) teen $1\frac{1}{5}$ maal werklike diens indien die kandidaat op 'n skip wat lang seereise onderneem as tweede van 2 waghoud-offisiere diens gedoen het en die gesagvoerder nie 'n waghoud-offisier was nie; of

(e) teen $1\frac{1}{2}$ maal werklike diens indien die kandidaat op 'n skip wat lang seereise onderneem, die tweede van 2 waghoud-offisiere en die gesagvoerder self ook 'n waghoud-offisier was.

Die bepalinge van hierdie subregulasie is nie van toepassing op enige deel van die diens wat by regulasie 19 (a) vereis word nie.

(5) Indien 'n kandidaat vir 'n sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart of Gesagvoerder van 'n skip op vreemde vaart die junior was van 2 offisiere wat gedurende 'n seereis verdubbelde waghoudiens verrig het, kan hy twee derdes van die diens wat hy aldus verrig het, reken vir die diens wat by regulasie 18 of regulasie 19 (a), na gelang van die geval, vereis word, tot 'n maksimum van 9 maande (d.w.s. hy moet $13\frac{1}{2}$ maande werklike diens gedoen het).

Watchkeeping Service.

24. (1) In every case where watchkeeping service is required, the candidate shall prove by the production of certificates of watchkeeping service in the form T.V. 5/108 set forth in Annex 1 or other documents acceptable to the examiner, that during the whole period claimed he has been in full or effective charge of a watch for not less than 8 hours out of every 24 hours' service claimed. Every such certificate of watchkeeping service or other document shall be signed by the master of the ship on which the candidate performed such service.

(2) Where a short voyage is made as a preliminary to, or at the conclusion of, a long voyage, the short voyage shall be considered part of the long voyage for the purpose of calculating watchkeeping service in the case of a candidate who has served throughout.

(3) Subject to the provisions of subregulation (2), in the case of a candidate serving on the short voyage but not on the long voyage, the short voyage shall be considered part of the long voyage for the purpose of calculating watchkeeping service, provided always that the total allowance for such a voyage or voyages shall not exceed 3 months in the case of a candidate for a certificate of competency as Chief Navigating Officer of a foreign-going ship, and 6 months in the case of a candidate for a certificate of competency as Master of a foreign-going ship.

(4) A candidate for a certificate of competency as Master of a foreign-going ship who, whilst holding a certificate of competency as Chief Navigating Officer of a foreign-going ship, has performed the watchkeeping service set out in the following paragraphs shall have such service reckoned—

(a) at one and one-half times actual service, in the case of service as first of 3 watchkeeping officers on a ship making long voyages where the candidate was next in seniority to the master;

(b) at one and one-fifth times actual service, in the case of service as first of 3 watchkeeping officers on a ship making long voyages where the candidate was not next in seniority to the master;

(c) at one and one-half times actual service, in the case of service as first of 2 watchkeeping officers where the master was not a watchkeeping officer, on a ship making long voyages;

(d) at one and one-fifth times actual service, in the case of service as second of 2 watchkeeping officers where the master was not a watchkeeping officer, on a ship making long voyages; or

(e) at one and one-half times actual service, in the case of second of 2 watchkeeping officers where the master was a watchkeeping officer, on a ship making long voyages.

The provisions of this subregulation shall not apply to any part of the service required by regulation 19 (a).

(5) If a candidate for a certificate of competency as Chief Navigating Officer of a foreign-going ship or Master of a foreign-going ship has been junior of 2 officers keeping a doubled watch during a voyage, he may count towards the service required by regulation 18 or regulation 19 (a) as the case may be, two-thirds of the watchkeeping time so served, up to a maximum of 9 months (i.e. he must have had $13\frac{1}{2}$ months actual service).

(6) In hierdie regulasie beteken—

(a) „effektiewe beheer oor 'n wag” verantwoordelikheid vir 'n wag, maar dit beteken nie dat 'n senior offisier nie soms toesig mag uitoefen sonder om op enige tydstop beheer oor die wag oor te neem nie; en

(b) „verdubbelde waghoudiens” 'n waghoudiens waarvan die hele of 'n deel waargeneem word deur 2 offisiere, van wie die senior gedurende die hele of 'n deel van die wag in beheer is.

Bevordering Gedurende Seereis.

25. Indien 'n kandidaat gedurende 'n seereis by die ontstaan van 'n vakature behoorlik bevorder is uit die rang waarin hy oorspronklik aangemonster het, en sodanige bevordering met die redes waarom dit gedoen is, behoorlik in die amptelike skeepsjournaal opgeteken is, moet hy vir die tydperk na sy bevordering vir sy diens in die hoër graad gekrediteer word.

Gemengde Diens.

26. Waar 'n kandidaat sy diens verrig het in meer as een hoedanigheid of gedeeltelik in 'n skip wat lang en gedeeltelik in 'n skip wat kort seereise onderneem, moet elke soort diens na verhouding as bekwaamende diens in berekening gebring word, mits sodanige diens in alle opsigte aan die vereistes van hierdie regulasies voldoen.

Bewys van Diens in Ander Skepe as Suid-Afrikaanse Skepe.

27. (1) Waar 'n kandidaat op bekwaamende diens in 'n skip wat nie in die Republiek geregistreer is nie, aanspraak maak en sodanige diens nie deur die Sekretaris geverifieer kan word nie, moet die diens bevestig word deur 'n amptelike owerheid van die land waaraan die skip behoort het waarin die kandidaat gedien het.

(2) As daar enigsins twyfel oor die afdoendheid van die gelewerde bewys bestaan, moet al die dokumente om beslissing na die Sekretaris verwys word.

Diens as Kok, ens.

28. (1) 'n Kandidaat wie se diens verrig is in 'n ander hoedanigheid as dié van dekleerlingoffisier, adelbors, dekadet, dekjonge, gewone seeman of volle seeman, bootman en onderbootman (bv. 'n man wat as kok gedien het op 'n klein vaartuig, waar kookwerk maar net 'n deel van sy werk uitgemaak het), moet aan die eksaminator bewys lewer dat hy gedurende die volle tyd waarop aanspraak gemaak word, benewens sy eie bepaalde werk ook dekwerk verrig het.

(2) Van die diens waarvan in subregulasie (1) melding gemaak word en wat gestaaf kan word deur 'n bevredigende sertifikaat van die Gesagvoerder onder wie die kandidaat gedien het, tel twee derdes as diens in die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton, ongeag of die diens verrig is op 'n skip wat lang of kort seereise onderneem het. In die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart tel twee derdes van sodanige diens as diens indien dit verrig is op 'n skip wat lang seereise onderneem het of op 'n skip van 1,600 of meer bruto registerton wat kort seereise onderneem het, en tel vier negendes van sodanige diens as diens indien dit verrig is op 'n skip van minder as 1,600 bruto registerton wat kort seereise onderneem het.

(3) Sodanige diens tel nie as bekwaamende diens vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton, Hoofnavigasie-offisier van 'n skip op vreemde vaart of Gesagvoerder van 'n skip op vreemde vaart nie.

(6) In this regulation—

(a) “effective charge of a watch” means responsibility for the watch, but does not preclude occasional supervision by a senior officer, provided that the senior officer does not at any time take charge of the watch; and

(b) “doubled watch” is a watch which is kept, or part of which is kept, by 2 officers, where the senior of them takes charge during the whole or part of the watch.

Promotion During Voyage.

25. If during the course of the voyage a candidate has been properly promoted on the occurrence of a vacancy, from the rank in which he first shipped, and such promotion with the reasons for which it has been made has been properly entered in the official log-book, he shall receive credit for his service in the higher grade for the period subsequent to his promotion.

Mixed Service.

26. Where a candidate has performed his service in more than one capacity, or partly in a ship making long voyages and partly in a ship making short voyages, proportionate allowance as qualifying service shall be made for each kind of service; provided that in other respects such service complies with the requirements of these regulations.

Evidence as to Service in Ships Other than South African Ships.

27. (1) Where a candidate claims qualifying service in a ship not registered in the Republic and such service cannot be verified by the Secretary, the service shall be confirmed by an official authority of the country to which the ship in which the candidate served belonged.

(2) If the sufficiency of the proof given appears to be at all doubtful, all papers shall be referred to the Secretary for decision.

Service as Cook, etc.

28. (1) A candidate whose service has been performed in a capacity other than deck apprentice-officer, midshipman, deck cadet, deckboy, ordinary seaman or able seaman, boatswain and boatswain's mate (e.g. a man who has served as cook in a small ship where cooking is only part of his duty) shall satisfy the examiner that he has, during the whole time claimed, performed deck duties in addition to his own particular work.

(2) The service referred to in subregulation (1) and which may be established by the production of a satisfactory certificate from the Master under whom the candidate served, shall, in the case of a candidate for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons be accepted at two-thirds rate irrespective of whether the service was performed in a ship making long or short voyages. In the case of a candidate for a certificate of competency as Second Navigating Officer of a foreign-going ship, such service shall be accepted at two-thirds rate if performed in a ship making long voyages or in a ship of 1,600 or more gross register tons making short voyages, and at four-ninths rate if performed in a ship of less than 1,600 gross register tons making short voyages.

(3) Such service shall not be accepted as qualifying for a certificate of competency as Master of a coasting ship of 100 or more gross register tons, Chief Navigating Officer of a foreign-going ship or Master of a foreign-going ship.

(4) By ontstentenis van bevredigende bewys kan die applikant aangesê word om addisionele diens in 'n hoedanigheid op dek te verrig, en alle twyfelagtige gevalle moet om beslissing na die Sekretaris verwys word.

Diens as Radio-offisier.

29. (1) Indien 'n kandidaat die ooreenkoms met die bemanning—

(a) as dekmanskap onderteken het maar as beide dekmanskap en radio-offisier gedien het; of

(b) as radio-offisier onderteken het, maar benewens sy normale werk as radio-offisier ook dekwerk verrig het,

geld twee derdes van sodanige diens vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 meer bruto registerton as diens, ongeag of die skip waarop sodanige diens verrig is, lang of kort seereise onderneem, geld twee derdes vir 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart as diens indien dit verrig is op 'n skip wat lang seereise onderneem of op 'n skip van 1,600 of meer bruto registerton wat kort seereise onderneem, en geld vier negendes as diens indien dit verrig is op 'n skip van minder as 1,600 bruto registerton wat kort seereise onderneem; met dien verstande dat die kandidaat van die Gesagvoerder onder wie hy gedien het, 'n sertifikaat inlewer ten effekte, in die geval van paragraaf (a), dat hy gedurende die volle tydperk waarop aanspraak gemaak word, benewens die werk van radio-offisier ook dekwerk verrig het, en in die geval van paragraaf (b), dat hy gedurende die hele seereis 'n redelike tyd elke dag dekwerk verrig het en nie meers as 2 uur per dag gereelde radioluisterdiens gedoen het nie.

(2) Indien 'n kandidaat die ooreenkoms met die bemanning as 'n radio-offisier onderteken en alleen as sodanig gedien het, word 'n kwart van sodanige diens ten opsigte van 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton as diens aanvaar ongeag of die skip waarop die diens verrig is, lang of kort seereise onderneem. In die geval van 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart word 'n kwart van sodanige diens as diens aanvaar indien dit verrig is op 'n skip wat lang seereise onderneem of op 'n skip van 1,600 of meer bruto registerton wat kort seereise onderneem, terwyl een sesde daarvan as diens aanvaar word indien dit verrig is op 'n skip van minder as 1,600 bruto registerton wat kort seereise onderneem. Die diens wat aldus aanvaar word, mag in elk geval nie 12 maande bekwaamende diens te bowe gaan nie.

(3) Die diens vermeld in subregulasies (1) en (2) tel nie as bekwaamende diens vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton, Hoofnavigasie-offisier van 'n skip op vreemde vaart of Gesagvoerder van 'n skip op vreemde vaart nie.

Leerlingoffisiere, Kadette en Adelbors.

30. (1) Behoudens die oorblywende bepalings van hierdie regulasie moet 'n leerlingoffisier, kadet of adelbors, ongeag of hy deur 'n leerkontrak gebonde is of nie, vir eksamen vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton of as Tweede Navigasie-offisier van 'n skip op vreemde vaart aanvaar word nadat hy minstens drie kwart van die nominale tydperk van 4 jaar voorgeskryf in regulasie 15 of 17, verminder met enige kwytskeldings ingevolge regulasies 12 (2), 31 en 33, gedien het; met dien verstande dat sodanige leerlingoffisier, kadet of adelbors van die gesagvoerder of eienaar van die skip waarop hy gedien het, bewys lewer dat sy diens bevredigend verrig is.

(4) In the absence of satisfactory evidence, the applicant may be required to perform additional service in a capacity on deck, and all cases of doubt shall be referred to the Secretary for decision.

Service as Radio Officer.

29. (1) If a candidate has signed the agreement with the crew—

(a) as a deck rating, but has served both as a deck rating and a radio officer; or

(b) as a radio officer, but has performed deck duties in addition to his normal functions as a radio officer,

such service shall, for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons, be accepted at two-thirds rate irrespective of whether the service was performed in a ship making long or short voyages, and for a certificate of competency as Second Navigating Officer of a foreign-going ship at two-thirds rate if performed in a ship making long voyages or in a ship of 1,600 or more gross register tons making short voyages, and at four-ninths rate if performed in a ship of less than 1,600 gross register tons making short voyages: Provided that the candidate produces a certificate from the Master under whom he served, in the case of paragraph (a) to the effect that during the whole period claimed he has performed deck duties in addition to the duties of a radio officer, and in the case of paragraph (b) to the effect that he performed deck duties throughout the voyage for a reasonable portion of time each day and that he has not spent more than 2 hours a day on regular radio watch.

(2) If a candidate has signed the agreement with the crew as a radio officer and has served only as such, such service shall for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons be accepted at one-quarter rate irrespective of whether the service was performed in a ship making long or short voyages. For a certificate of competency as Second Navigating Officer of a foreign-going ship, such service shall be accepted at one-quarter rate if performed in a ship making long voyages or in a ship of 1,600 or more gross register tons making short voyages and at one-sixth rate if performed in a ship of less than 1,600 tons making short voyages. In either case the service so accepted shall not exceed a maximum of 12 months' qualifying service.

(3) The service referred to in subregulations (1) and (2) shall not be accepted as qualifying for a certificate of competency as Master of a coasting ship of 100 or more gross register tons, Chief Navigating Officer of a foreign-going ship or Master of a foreign-going ship.

Apprentice-Officers, Cadets and Midshipmen.

30. (1) Subject to the remaining provisions of this regulation, an apprentice-officer, cadet or midshipman, whether bound by indentures or not, shall be accepted for examination for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons or as Second Navigating Officer of a foreign-going ship after having served on board ship for not less than three-quarters of the nominal period of 4 years prescribed in regulation 15 or 17 reduced by any remissions granted in terms of regulations 12 (2), 31 and 33: Provided that such apprentice-officer, cadet or midshipman produces evidence from the master or owner of the ship in which he served to the effect that this service was satisfactorily performed.

(2) Ongeag die bepalings van subregulasie (1) mag 'n kandidaat nie tot 'n eksamen toegelaat word alvorens hy minstens 24½ maande diens op 'n skip voltooi het nie.

(3) Indien 'n kandidaat die nominale dienstyd voltooi het maar nie oor die nodige diens op 'n skip beskik nie, kan die tekort ten opsigte van sodanige diens deur diens op see in 'n dekhoedanigheid aangesuiwer word.

(4) Waar 'n kandidaat se diens op 'n skip aansienlike tydperke insluit wat in hawens deurgebring is, moet die eksaminator elke geval na die verdienste behandel en sodanige tydperke in aanmerking neem, maar hy moet die noodsaaklikheid van voldoende ervaring van werklike diens op see in gedagte hou.

(5) In die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton geld die volle dienstyd op 'n skip wat lang of kort seereise onderneem, as bekwaamende diens.

(6) In die geval van 'n kandidaat vir 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart geld as bekwaamende diens die volle dienstyd op 'n skip wat lang of op 'n skip van 1,600 of meer bruto registerton wat kort seereise onderneem, terwyl van die dienstyd op 'n skip van minder as 1,600 bruto registerton wat kort seereise onderneem, twee derdes as bekwaamende diens tel.

(7) 'n Kandidaat wat die voorgeskrewe tydperk bekwaamende diens voltooi het, kan die eksamen aflê wanneer hy 19½ jaar oud is. As hy die eksamen deurkom, mag 'n bekwaamheidsertifikaat nie aan hom uitgereik word alvorens hy 20 jaar oud is nie.

Persone met Hoër Akademiese Kwalifikasies.

31. (1) As 'n kandidaat vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton of as Tweede Navigasie-offisier van 'n skip op vreemde vaart die houer is van 'n hoër akademiese kwalifikasie wat of Matesis of Fisika insluit, word uit hoofde van sodanige kwalifikasie aan hom vrystelling verleen van hoogstens 9 maande van die 4 jaar bekwaamende diens wat onderskeidelik in regulasies 15 en 17 voorgeskryf is. Sodanige vrystelling geld bo en behalwe enige vrystelling kragtens regulasies 12 (2) en 33, maar die totale vrystelling is onderworpe aan 'n maksimum van 15 maande.

(2) Vir die toepassing van subregulasie (1) beteken „hoër akademiese kwalifikasie” —

- (a) die Transvaalse Eindsertifikaat van die Middelbare Skool;
- (b) Skooleindsertifikaat van die Oranje-Vrystaat;
- (c) die Natalse Seniorsertifikaat;
- (d) die Kaapse Senior Sertifikaat;
- (e) die Nasionale Senior Sertifikaat met slaagpunte in 5 vakke; of
- (f) enige kwalifikasie wat na die mening van die Sekretaris gelyk is aan enige van die sertifikate vermeld in paragrawe (a) tot (e).

Leerlingoffisier of Kadet se Bevordering Gedurende sy Dienstyd.

32. Waar 'n leerlingoffisier of kadet vir die laaste jaar van sy leertyd of kadetskap tot ongediplomeerde junior offisier in dieselfde maatskappy bevorder word, word sodanige offisier se diens met die oog op die bepaling van bekwaamende diens behandel as leerlingoffisiërs- of kadetdiens.

(2) Notwithstanding the provisions of subregulation (1), no candidate shall be admitted to an examination until he has completed at least 24½ months of service on board ship.

(3) If a candidate has completed the nominal period of service, but is short of the necessary service on board ship, any deficiency in such service shall be made up by service at sea in a deck capacity.

(4) In cases where a candidate's service on board ship includes considerable periods spent in port, the examiner shall treat each case on its merits and shall make allowances for such periods, but he shall bear in mind the essentiality of sufficient experience of actual service at sea.

(5) In the case of a candidate for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons, time spent in service in a ship making long or short voyages shall count in full as qualifying.

(6) In the case of a candidate for a certificate of competency as Second Navigating Officer of a foreign-going ship, time spent in service in a ship making long voyages or in a ship of 1,600 or more gross register tons making short voyages shall count in full as qualifying, whereas time spent in service in a ship of less than 1,600 gross register tons making short voyages shall count at two-thirds rate.

(7) A candidate who has completed the prescribed period of qualifying service, may sit the examination at the age of 19½ years. If he is successful in the examination a certificate of competency shall not be issued to him until he reaches the age of 20 years.

Persons Holding Higher Academic Qualifications.

31. (1) A candidate for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons or as Second Navigating Officer of a foreign-going ship who holds a higher academic qualification which shall include either mathematics or physics, shall in respect of such qualification, be allowed a remission not exceeding 9 months of the 4 years' qualifying service prescribed in regulations 15 and 17 respectively. Such remission shall be in addition to any remission granted under regulations 12 (2) and 33, subject to an overall maximum of 15 months.

(2) For the purposes of subregulation (1), a "higher academic qualification" means—

- (a) the Transvaal Secondary School Certificate;
- (b) the Orange Free State School leaving Certificate;
- (c) the Natal Senior Certificate;
- (d) the Cape Senior Certificate;
- (e) the National Senior Certificate with passes in 5 subjects; or
- (f) any qualification which the Secretary regards as being equivalent to any of the certificates mentioned in paragraphs (a) to (e).

Promotion During the Service of an Apprentice-Officer or Cadet.

32. Where an apprentice-officer or cadet is promoted to uncertificated junior officer in the same company, for the last year of apprenticeship or cadetship, such officer's service shall be treated, for the purpose of assessing qualifying service, as apprentice-officer or cadet service.

Opleidingsinrigtings.

33. Diens wat, hetsy op land of nie, na bereiking van die ouderdom van 14 jaar verrig is by 'n opleidingsinrigting wat deur die Sekretaris goedgekeur is, tel as deel van die vereiste tydperk bekwaamende diens vir 'n bekwaamheidsertifikaat; met dien verstande dat—

(a) die kandidaat 'n bevredigende sertifikaat van die prinsipaal of ander persoon aan die hoof van die inrigting voorlê waarin verklaar word dat die kandidaat die opleidingskursus verskaf deur die inrigting voltooi het en getuig word van sy goeie gedrag en bekwaamheid tot op die tydstop toe hy die inrigting verlaat het;

(b) die Sekretaris ten opsigte van elke inrigting wat deur hom goedgekeur is, bepaal watter deel van die tyd wat aan daardie inrigting deurgebring is, as bekwaamende diens tel;

(c) geen diens tyd aan 'n opleidingsinrigting as meer as 'n jaar bekwaamende diens mag tel nie; en

(d) tyd wat aan 'n goedgekeurde inrigting deurgebring is, nie aanvaar word in die plek van enige deel van die diens as gediplomeerde offisier soos by regulasie 16, 18 of 19 of in die plek van bekwaamende diens soos by regulasie 38 (3) vereis nie.

Diens op Vissersbote of Robbevaarders of Walvisvaarders met Landbasis.

34. (1) Van diens uitsluitlik op 'n vissersboot, robbevaarder of walvisvaarder met landbasis met 'n tonnemaat van 100 of meer bruto registerton tel twee derdes as bekwaamende diens vir 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart en tel alles as bekwaamende diens vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.

(2) Diens op 'n vissersboot, robbevaarder of walvisvaarder met landbasis van minder as 100 bruto registerton word vir die toepassing van hierdie regulasies alles aanvaar as bekwaamende diens vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.

(3) Benewens sodanige diens op 'n vissersboot, robbevaarder of walvisvaarder met landbasis moet die kandidaat bewys lewer van die volgende diens in teenstelling met diens op 'n vissersboot, diamantontdekkingskip of ander nie-handelsvaartuig:—

(a) Vir 'n sertifikaat van bekwaamheid as Tweede Navigasie-offisier van 'n skip op vreemde vaart—

(i) minstens 18 maande op 'n skip wat lang seereise onderneem; of

(ii) minstens 27 maande op 'n skip wat kort seereise onderneem; of

(b) Vir 'n sertifikaat van bekwaamheid as Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton, minstens 12 maande op 'n skip wat lang of kort seereise onderneem.

Diens op Walvisvaarders, Uitgesonderd Walvisvaarders met Landbasis.

35. Behoudens die bepalings van hierdie regulasies word diens op 'n ander walvisvaarder as 'n walvisvaarder met landbasis alles as bekwaamende diens vir 'n bekwaamheidsertifikaat aanvaar.

Diens op Vlootvaartuie.

36. (1) Diens in 'n dekhoedanigheid op 'n skip van die Suid-Afrikaanse vloot word vir die toepassing van regulasie 15 alles as bekwaamende diens aanvaar, en vir die toepassing van regulasie 17 geld twee derdes daarvan as

Training Establishments.

33. Time served after the attainment of the age of 14 years at a training establishment, whether on shore or not, which has been approved by the Secretary, shall count towards the period of qualifying service required for a certificate of competency: Provided that—

(a) the candidate produces a satisfactory certificate from the principal or other person in charge of the establishment to the effect that the candidate has completed the course of training provided by the establishment and testifying to his good conduct and proficiency up to the time of his leaving the establishment;

(b) the Secretary shall determine in respect of each establishment approved by him what proportion of the time spent at that establishment shall count towards qualifying service;

(c) no length of service at a training establishment shall be equivalent to more than one year's qualifying service; and

(d) time spent at an approved training establishment shall not be accepted in lieu of any part of the service as certificated officer required by regulations 16, 18 or 19; nor in lieu of qualifying service required in terms of regulation 38 (3).

Service in Fishing, Sealing or Shore-based Whaling Boats.

34. (1) Service performed exclusively in a fishing, sealing or shore-based whaling boat of 100 or more gross register tons shall count at two-thirds rate towards qualifying for a certificate of competency as Second Navigating Officer of a foreign-going ship and shall count in full for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons.

(2) Service in a fishing, sealing or shore-based whaling boat of less than 100 gross register tons shall for purposes of these regulations be accepted in full as qualifying for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons.

(3) In addition to such service in a fishing, sealing or shore-based whaling boat, the candidate shall produce proof of the following service as distinct from service in a fishing boat, diamond exploration ship or other non-trading ship:—

(a) For a certificate of competency as Second Navigating Officer of a foreign-going ship—

(i) at least 18 months in a ship making long voyages; or

(ii) at least 27 months in a ship making short voyages; or

(b) for a certificate of competency as Navigating Officer of a coasting ship of 100 or more gross register tons, at least 12 months in a ship making long or short voyages.

Service in Whaling Boats other than Shore-based Whaling Boats.

35. Service performed in a whaling boat other than a shore-based whaling boat shall, subject to the provisions of these regulations, be accepted in full as qualifying for any certificate of competency.

Service Performed in Naval Ships.

36. (1) Service performed in a deck capacity in a ship of the South African navy shall be accepted in full as qualifying service for the purpose of regulation 15 and at two-thirds rate for the purpose of regulation 17. A period

bekwamende diens. Ten opsigte van die bywoning van 'n opleidingskursus in 'n vlootinrigting op land kan hoogstens 3 maande as sodanige bekwamende diens gereken word en wel op grondslag van 'n maand erkenning vir 2 maande opleiding.

(2) Diens in die vloot van 'n ander land as die Republiek word ooreenkomstig subregulasie (1) aanvaar indien die kandidaat sy aanspraak op sodanige diens tot tevredenheid van die Sekretaris kan staaf.

(3) Waghoudiens deur 'n uitvoerende offisier op 'n seevarende skip van die Suid-Afrikaanse vloot word as bekwamende diens ooreenkomstig regulasie 16 (b) aanvaar en vir die toepassing van regulasie 19 (b) geld twee derdes daarvan as bekwamende diens.

HOOFSTUK IV.

SLAGING OF DRUIPPING IN EKSAMEN.

Eksamen vir Ander Bekwaamheidsertifikaat as dié van Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

37. Ten einde die skriftelike deel van die eksamen vir 'n ander bekwaamheidsertifikaat as dié van Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—deur te kom, moet 'n kandidaat vir die onderskeie vakke die toepaslike persentasies wat in onderstaande tabelle aangegee word, en vir al die vakke gesamentlik 70 persent van die totale punte behaal. Die tyd en punte wat vir elke skriftelike deel van die eksamen vir elke graad sertifikaat toegewys is, is as volg:—

(a) Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.

	Tyd.	Punte.	Slaag-persentasie
			%
Eerste dag—			
1. Praktiese navigasie.....	3 uur	150	70
2. Kaartwerk.....	2 uur	150	70
Tweede dag—			
3. Skeepskenis.....	2 uur	150	50
4. Opstel in een van die amptelike tale.....	1½ uur	100	—
	—	550	70

Mondelinge eksamens na gelang gerieflik.

(b) Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton.

	Tyd.	Punte.	Slaag-persentasie.
			%
Eerste dag—			
1. Kaartwerk.....	2 uur	150	70
2. Praktiese navigasie.....	2 uur	150	70
Tweede dag—			
3. Stabiliteit.....	2 uur	200	50
4. Kompasdeviasie.....	1½ uur	100	—
Derde dag			
5. Vragwerk.....	2 uur	150	—
	—	750	70

Mondelinge eksamens na gelang gerieflik.

not exceeding 3 months may be claimed towards such qualifying service in respect of attendance at a training course in a naval establishment ashore on the basis of 2 months' training for one month's recognition.

(2) Service in the navy of a country other than the Republic shall be accepted in accordance with the provisions of subregulation (1) if the candidate is able to establish his claim to such service to the satisfaction of the Secretary.

(3) Watchkeeping service performed by an executive officer in a sea-going ship of the South African navy shall be accepted as qualifying service satisfying regulation 16 (b) and at two-thirds rate for the purpose of regulation 19 (b).

CHAPTER IV.

SUCCESS OR FAILURE IN EXAMINATION.

Examination for a Certificate of Competency other than Master of a Foreign-going Ship—Special Grade.

37. To secure a pass in the written portion of the examination for a certificate of competency other than as Master of a foreign-going ship—Special Grade, a candidate shall be required to obtain the appropriate percentage pass in the subjects shown in the following tables and also to obtain 70 per cent of the total marks for all subjects. The time and marks allotted for each written part of the examination for each grade of certificate are as follows:—

(a) Navigating Officer of a Coasting Ship of 100 or more Gross Register Tons.

	Time.	Marks.	Percentage Pass.
			%
First day—			
1. Practical navigation.....	3 hrs.	150	70
2. Chart work.....	2 hrs.	150	70
Second day—			
3. Ship knowledge.....	2 hrs.	150	50
4. Essay in one of the Official Languages	1½ hrs.	100	—
	—	550	70

Orals as convenient.

(b) Master of a Coasting Ship of 100 or more Gross Register Tons.

	Time.	Marks.	Percentage Pass.
			%
First day—			
1. Chart work.....	2 hrs.	150	70
2. Practical navigation.....	2 hrs.	150	70
Second day—			
3. Stability.....	2 hrs.	200	50
4. Compass Deviation.....	1½ hrs.	100	—
Third day—			
5. Cargo work.....	2 hrs.	150	—
	—	750	70

Orals as convenient.

(c) Tweede Navigasie-offisier van 'n skip op vreemde vaart.

	Tyd.	Punte.	Slaag-persentasie.
			%
Eerste dag—			
1. Algemene skeepskennis.....	3 uur	200	—
2. Kaartwerk.....	2 uur	200	70
Tweede dag—			
3. Praktiese navigasie.....	3 uur	200	70
4. Wiskunde.....	2 uur	150	50
Derde dag—			
5. Grondbeginsels van navigasie....	2 uur	150	50
6. Taal.....	1½ uur	100	50
	—	1,000	70

Vierde of daaropvolgende dae: Mondelinge eksamens.

(d) Hoofnavigasie-offisier van 'n skip op vreemde vaart.

	Tyd.	Punte.	Slaag-persentasie.
			%
Eerste dag—			
1. Praktiese navigasie.....	3 uur	200	70
2. Kaartwerk.....	2 uur	150	70
Tweede dag—			
3. Skeepsbou.....	3 uur	200	50
4. Weerkunde.....	2 uur	100	—
Derde dag—			
5. Skeepsonderhoud.....	3 uur	200	50
6. Magnetisme en elektrisiteit.....	2 uur	150	—
	—	1,000	70

Vierde en daaropvolgende dae: Mondelinge eksamens.

(e) Gesagvoerder van 'n skip op vreemde vaart.

	Tyd.	Punte.	Slaag-persentasie.
			%
Eerste dag—			
1. Praktiese navigasie.....	3 uur	200	70
2. Magnetiese kompas.....	3 uur	200	50
Tweede dag—			
3. Skeepsbou.....	3 uur	200	50
4. Gesagvoerdersake.....	2 uur	150	50
Derde dag—			
5. Ingenieurswese en radiohulpmiddels.....	3 uur	150	—
6. Weerkunde.....	2 uur	100	—
	—	1,000	70

Vierde en daaropvolgende dae: Mondelinge eksamens.

Gedeeltelike Slaging in 'n Eksamen vir 'n ander Bekwaamheidsertifikaat as dié van Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

38. (1) Hierdie regulasie is nie op 'n kandidaat vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—van toepassing nie.

(2) Slaging in die skriftelike, die mondelinge of die seindeel van die eksamen bly 6 maande lank geldig en as die kandidaat gedurende hierdie tydperk in al die dele deurekom, is hy tot 'n bekwaamheidsertifikaat geregtig. Indien meer as 6 maande verstryk het sedert die kandidaat enige deel van die eksamen deuregekome het, moet hy daardie deel weer aflê, maar die Sekretaris kan hierdie tydperk in spesiale omstandighede tot 'n jaar verleng.

(c) Second Navigating Officer of a Foreign-going ship.

	Time.	Marks.	Percentage Pass.
			%
First day—			
1. General Ship Knowledge.....	3 hrs.	200	—
2. Chart Work.....	2 hrs.	200	70
Second day—			
3. Practical navigation.....	3 hrs.	200	70
4. Mathematics.....	2 hrs.	150	50
Third day—			
5. Principles of navigation.....	2 hrs.	150	50
6. Language.....	1½ hrs.	100	50
	—	1,000	70

Fourth or subsequent days.....Orals.

(d) Chief Navigating Officer of a Foreign-going Ship.

	Time.	Marks.	Percentage Pass.
			%
First day—			
1. Practical navigation.....	3 hrs.	200	70
2. Chart work.....	2 hrs.	150	70
Second day—			
3. Ship construction.....	3 hrs.	200	50
4. Meteorology.....	2 hrs.	100	—
Third day—			
5. Ship maintenance.....	3 hrs.	200	50
6. Magnetism and Electricity.....	2 hrs.	150	—
	—	1,000	70

Fourth and subsequent days.....Orals.

(e) Master of a Foreign-going Ship.

	Time.	Marks.	Percentage Pass.
			%
First day—			
1. Practical navigation.....	3 hrs.	200	70
2. Magnetic Compass.....	3 hrs.	200	50
Second day—			
3. Ship Construction.....	3 hrs.	200	50
4. Shipmaster's business.....	2 hrs.	150	50
Third day—			
5. Engineering and Radio Aids.....	3hrs.	150	—
6. Meteorology.....	2 hrs.	100	—
	—	1,000	70

Fourth or subsequent days.....Orals.

Partial Pass in an Examination for a Certificate of Competency other than Master of a Foreign-going Ship—Special Grade.

38. (1) This regulation shall not apply to a candidate for a certificate of competency as Master of a foreign-going ship—Special Grade.

(2) A pass in either the written, oral or signals part of the examination shall remain valid for a period of 6 months, and if the candidate secures a pass in all parts during this period he shall be entitled to a certificate of competency. If more than 6 months have elapsed since the candidate passed any portion of the examination, he shall be required to take that portion again, although the Secretary may, in special circumstances, extend this period to 1 year.

(3) 'n Kandidaat wat weens ernstige gebrek aan praktiese kennis in die mondelinge deel van die eksamen druip, kan na goedvinde van die eksaminator aangesê word om voor hereksaminering verdere seediens te verrig. Sodanige seediens moet nie 6 maande te bowe gaan nie en kan in enige hoedanigheid op dek op enige seevarende skip verrig word.

(4) In die geval van 'n tweede of daaropvolgende druiping in die skriftelike en/of mondelinge deel van die eksamen vir 'n bekwaamheidsertifikaat moet daar 2 maande vanaf die datum van die jongste druiping verloop alvorens die kandidaat hereksamineer mag word. As 'n kandidaat minstens 6 maande op 'n skip gedien het nadat hy laas in een of albei dele gedruip het, word die volgende poging as 'n eerste poging binne die bedoeling van hierdie subregulasie behandel.

Tyd wat moet Verstryk tussen Druiping in Skriftelike Deel van Eksamen en Hereksaminering vir 'n ander Bekwaamheidsertifikaat as dié van Gesagvoerder van 'n skip op Vreemde Vaart—Spesiale Graad.

39. Die eksaminator kan eis dat 'n tydperk wat na eie oordeel deur hom bepaal moet word, moet verstryk voor die hereksaminering van 'n kandidaat vir 'n ander bekwaamheidsertifikaat as dié van Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—wat in die skriftelike deel van die eksamen gedruip het; met dien verstande dat die aldus bepaalde tydperk nie 3 maande te bowe gaan nie; voorts met dien verstande dat 'n kandidaat wat gedruip het, nie in die eersvolgende week na die een waarin hy gedruip het, hereksamineer mag word nie tensy daar na die mening van die eksaminator spesiale omstandighede bestaan.

Eksamen vir 'n Sertifikaat van Bekwaamheid as Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

40. (1) (a) Die skriftelike eksamen bestaan uit 2 dele, as volg:—

Deel A.—Kaartkonstruksie en see-opname: handels- en regskennis; skeepsbou en -onderhoud; weerkunde, oseanografie en ekonomiese aardrykskunde; en

Deel B.—Wiskunde, algemene fisika; magnetisme en elektrisiteit; die teorie van skeepsboukunde en hidrostatika; navigasie en navigasihulpmiddels.

(b) 'n Kandidaat kan kies watter deel hy die eerste wil aflê en of hy albei dele saam wil aflê.

(c) Ten einde in die skriftelike deel van die eksamen te slaag, moet 'n kandidaat 70 persent van die totale punte in elke deel afsonderlik en minstens 50 persent in elke vak behaal.

(d) Die tyd en punte toegewys aan elke skriftelike deel van die eksamen is as volg:—

Deel A.—Eerste week—

	Tyd.	Punte.
Eerste dag—		
1. Handels- en regskennis.....	3 uur	250
2. Skeepsbou en -onderhoud.....	3 uur	250
Tweede dag—		
3. Kaartkonstruksie en see-opname.....	3 uur	250
4. Weerkunde, oseanografie en ekonomiese aardrykskunde.....	3 uur	250
	—	1,000

(3) A candidate who fails in the oral portion of the examination for a certificate of competency through serious weakness in practical knowledge may, in the examiner's discretion, be required to perform further sea service before being re-examined. Such sea service shall not exceed 6 months and may be performed in any capacity on deck in any sea-going ship.

(4) In the case of a second failure or any subsequent failure in the written or oral portion, or both, of the examination for a certificate of competency, 2 months shall elapse from the date of the last failure before the candidate may be re-examined. If a candidate has served on a ship for a period of not less than 6 months since the last failure in either or both parts, the next attempt shall be treated as a first attempt within the meaning of this subregulation.

Time that must Elapse Between Failure in Written Portion of Examination and Re-Examination, for a Certificate of Competency other than Master of a Foreign-going Ship—Special Grade.

39. The examiner may require that a period to be determined by him in his discretion shall elapse before a candidate, for a certificate of competency other than Master of a foreign-going ship—Special Grade, who has failed the written portion of the examination is re-examined: Provided that the period so determined shall not exceed 3 months: Provided further, that a candidate who has failed shall not be re-examined in the week next after that in which he failed, unless in the opinion of the examiner special circumstances exist.

Examination for a Certificate of Competency as Master of a Foreign-going Ship—Special Grade.

40. (1) (a) The written examination is divided into 2 parts as follows:—

Part A.—Chart construction and Marine surveying; Commercial and legal knowledge; ship construction and maintenance; meteorology; oceanography and economic geography; and

Part B.—Mathematics; general physics; magnetism and electricity; theoretical naval architecture and hydrostatics; navigation and navigational aids.

(b) A candidate shall have the option of taking either part first or both parts together.

(c) To secure a pass in the written portion of the examination, a candidate shall be required to obtain 70 per cent of the total marks in each part separately and shall be required to reach a minimum of 50 per cent in each subject.

(d) The time and marks allotted for each written part of the examination are as follows:—

Part A.—First week—

	Time.	Marks.
First day		
1. Commercial and legal knowledge.....	3hrs.	250
2. Ship construction and maintenance.....	3 hrs.	250
Second day—		
3. Chart construction and Marine surveying..	3 hrs.	250
4. Meteorology, oceanography and economic geography.....	3hrs.	250
	—	1,000

Deel B.—Tweede week—

	Tyd.	Punte.
Eerstedag—		
5. Wiskunde.....	4 uur	200
Tweede dag—		
6. Agemene Fisika.....	4 uur	200
Derde dag—		
7. Magnetisme en elektrisiteit.....	4 uur	200
Vierde dag—		
8. Teorie van skeepsboukunde en hidrostatika	3 uur	200
9. Navigasie en navigasihulpmiddels.....	3 uur	200
	—	1,000

(2) Die mondelinge eksamen moet afgeleë word op 'n tyd wat deur die eksaminator bepaal moet word.

Gedeeltelike Slaging in 'n Eksamen vir 'n Sertifikaat van Bekwaamheid as Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

41. 'n Kandidaat vir 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—kan die mondelinge eksamen aflê wanneer hy 1 van die 2 skriftelike dele van die eksamen doen en hy kan kies saam met watter 1 van die 2 dele hy dit wil aflê. As hy in 1 van die 2 skriftelike dele van die eksamen deurkom en in die mondelinge deel druipt, kan hy na goedvinde van die eksaminator teen betaling van 'n spesiale eksamengeld van R8 op 'n gerieflike tyd in die mondelinge deel hereksamineer word. Slaging in enige deel van die skriftelike eksamen of in die mondelinge eksamen geld vir altyd en moet deur die eksaminator by wyse van 'n endossement op die kandidaat se sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart opgeteken word. 'n Kandidaat wat in hoogstens 1 vak in enige deel van die skriftelike eksamen druipt, kan na goedvinde van die Sekretaris binne 12 maande na die datum waarop die betrokke deel van die eksamen afgeleë is, net in daardie vak hereksamineer word. Die punte wat die kandidaat by hereksaminering in daardie vak moet behaal om te slaag, moet deur die Sekretaris bepaal word. Indien die kandidaat die vak dan deurkom, word hy geag in die betrokke deel van die eksamen te geslaag het, maar as hy druipt of hom nie binne die voorgeskrewe tyd vir hereksaminering aanmeld nie, word hy geag in daardie deel te gedruip het.

HOOFSTUK V.

AFNEEM VAN EKSAMENS.

Kandidate Moet op Tyd Wees.

42. 'n Kandidaat moet stip op die bepaalde tyd by die eksamenkamer wees.

Vreemdelinge Nie Toegelaat Nie.

43. Afgesien van iemand wie se pligte dit van hom vereis om aanwesig te wees, word niemand gedurende die eksamen in die kamer toegelaat nie. Geen instrukteur word op die perseel toegelaat terwyl 'n eksamen aan die gang is nie.

Los Velle Papier en Boeke.

44. Voordat die eksamen begin, moet alle ander stukkies papier en boeke as dié wat kragtens hierdie regulasies in die eksamenkamer toegelaat word, van die tafels of lessenaars verwyder word.

Part B.—Second week—

	Time.	Marks.
First day—		
5. Mathematics.....	4 hrs.	200
Second day—		
6. General physics.....	4 hrs.	200
Third day—		
7. Magnetism and electricity.....	4 hrs.	200
Fourth day—		
8. Theoretical naval architecture and hydrostatics.....	3 hrs.	200
9. Navigation and navigational aids.....	3 hrs.	200
	—	1,000

(2) The examination in the oral part shall take place at a time to be decided by the examiner.

Partial Pass in an Examination for a Certificate of Competency as a Master of a Foreign-going Ship—Special Grade.

41. A candidate for a certificate of competency as Master of a foreign-going ship—Special Grade, may take the oral part when he takes either part of the written examination, according to his wishes. If he passes in either part of the written examination and fails in the oral part, he may, at the examiner's discretion, be re-examined at a convenient time in the oral part on payment of a special fee of R8. A pass in either part of the written examination or in orals shall hold good for all time and shall be recorded by the examiner by means of an endorsement on the candidate's certificate of competency as Master of foreign-going ship. A candidate failing in either part of the written examination in not more than 1 subject may, at the discretion of the Secretary, be re-examined in that subject alone within 12 months from the date on which the appropriate part of the examination was taken. The mark which the candidate shall attain in the subject on re-examination in order to pass shall be determined by the Secretary. If the candidate then passes in the subject, he shall be deemed to have passed in the appropriate part of the examination; if, however, he fails or does not present himself for re-examination within the prescribed period, he shall be deemed to have failed in that part.

CHAPTER V.

CONDUCT OF EXAMINATIONS.

Candidates to be Punctual.

42. A candidate shall appear at the examination room punctually at the time appointed.

No Strangers Admitted.

43. No person other than a person whose duties require him to be present shall be allowed in the room during examination. No instructor shall be allowed on the premises while an examination is in progress.

Loose Papers and Books.

44. Before the examination begins the tables or desks shall be cleared of all scraps of paper and books other than those permitted in the examination room in terms of these regulations.

Gebruik van Boeke en Tafels in die Eksamens.

45. Die volgende tafels en boeke kan deur die eksaminator in die eksamenkamer verskaf word:—

Seevaarttafels (logaritmetafels inbegrepe): Norie (volledige uitgawe), Burtons;

Altasimuttafels: Davis;

Getytafels van die Admiraliteit; en

Abridged Nautical Almanac.

'n Kandidaat wat ander tafels wil gebruik as dié wat hierbo genoem is, kan sodanige tafels in die eksamenkamer inbring op voorwaarde dat hy hulle voor die aanvang van die eksamen met die oog op besigtiging en goedkeuring aan die eksaminator toon. Hierdie tafels mag geen aantekeninge in manuskrip bevat nie. Behoudens die eksaminator se goedkeuring word geen beperking op die gebruik van enige tafels geplaas nie, maar 'n kandidaat moet die teorie begryp waarop die tafels gebaseer is en sodanige tafels moet in staat wees om 'n antwoord binne die vereiste noukeurigheidssperke te verskaf. Wanneer daar by die beantwoording van 'n vraag gebruik gemaak word van ander tafels as dié wat deur die eksaminator verskaf word, moet die naam van die tafels en 'n aanduiding van wat werklik uit hulle verkry is, op die kandidaat se eksamenskrif verstrek word.

Gebruik van Instrumente.

46. Alle instrumente wat vir gebruik in die eksamen nodig is, sal deur die eksaminator verskaf word, maar 'n kandidaat kan toegelaat word om sy eie tekeninstrumente en rekenliniale te verskaf mits die eksaminator se goedkeuring voor die aanvang van die eksamen verkry word. As 'n rekenliniaal gebruik word, moet 'n aantekening te dien effekte op die kandidaat se eksamenskrifte aangebring word.

Ongeoorloofde Boeke en Papiere Streng Verbode.

47. Behoudens die bepalings van regulasie 44 mag 'n kandidaat nie ander boeke, aantekeninge, memorandums of papiere by hom hê as wat vir gebruik in die eksamen verskaf is nie, en indien 'n kandidaat boeke, aantekeninge, memorandums of papiere met hom saamgebring het, moet hy hulle aan die eksaminator oorhandig voordat hy met die eksamen begin.

Beskadiging van Boeke, Instrumente, ens.

48. Indien 'n kandidaat 'n boek, dokument of instrument wat deur die eksaminator aan hom verskaf is, skend of andersins beskadig, moet hy die beskadigde boek, dokument of instrument vervang of anders die skade vergoed.

Verlating van Kamer.

49. 'n Kandidaat mag nie sy sitplek of die eksamenkamer sonder die toestemming van die eksaminator verlaat nie, en as hy die kamer verlaat, moet hy die antwoordboek en vraestel waarmee hy besig is, aan die eksaminator oorhandig, en na sy terugkeer in die kamer mag hy nie sonder die toestemming van die eksaminator aangaan met 'n vraestel of probleem waarmee hy besig was nie.

Stilte.

50. Stilte moet in die eksamenkamer bewaar word terwyl 'n skriftelike eksamen aan die gang is.

Alle Werk Moet Getoon Word.

51. (1) 'n Kandidaat moet net op die 1 kant van die papier werk of skryf. Hy moet sy antwoorde duidelik en leesbaar neerskryf en sy naam onderaan elke vel teken.

(2) 'n Kandidaat moet nie sy probleme op skeurpapier uitwerk of op die vloeipapier skryf wat aan hom vir gebruik in die eksamen verskaf is nie.

Use of Books and Tables at the Examinations.

45. The following tables and books may be supplied by the examiner in the examination room:—

Nautical tables (including logarithm tables): Norie (full edition), Burtons;

Alt-Azimuth tables: Davis;

Admiralty tide tables; and

Abridged Nautical Almanac.

A candidate who wishes to use tables other than the above may bring such tables into the examination room, on condition that he submits them to the examiner for scrutiny and approval before the examination begins. These tables shall not contain any manuscript notes. Subject to the examiner's approval, no restriction shall be placed on the use of any tables, but a candidate must understand the theory on which the tables are based, and such tables must be capable of giving an answer within the required limits of accuracy. When tables other than those supplied by the examiner are used in answering a question, the name of the tables and a note of what is actually obtained from them shall be stated on the candidate's paper.

Use of Instruments.

46. All instruments necessary for use in the examination will be supplied by the examiner, but a candidate may be allowed to use his own drawing instruments and slide rules; provided that the examiner's approval is obtained before the examination begins. If a slide rule is used, a note to this effect shall be entered on the candidate's answer papers.

Unauthorised Books and Papers Strictly Forbidden.

47. Subject to the provisions of regulation 44, a candidate shall not have with him any books, notes, memoranda or papers other than those supplied for use at the examination and if a candidate has brought any books, notes, memoranda or papers with him, he shall hand them to the examiner before commencing the examination.

Damage to Books, Instruments, etc.

48. If a candidate defaces or otherwise damages any book, document or instrument supplied to him by the examiner he shall replace the damaged book, document or instrument or otherwise make good the damage.

Leaving Room.

49. A candidate shall not, without the permission of the examiner, leave his seat or the examination room and if he leaves the room he shall hand to the examiner the paper on which he is engaged, and upon his return to the room shall not, without the permission of the examiner go on with any paper or problem on which he was engaged.

Silence.

50. Silence shall be kept in the examination room while a written examination is in progress.

All Work to be Shown.

51. (1) A candidate shall work or write only on one side of the paper and shall write his answers in a clear and legible hand, and shall sign his name at the foot of each page.

(2) A candidate shall not work out his problems on waste paper, nor write on the blotting paper supplied for his use in the examination.

(3) Alle werk, uitgesonderd sketse en tekeninge, moet met ink gedoen word.

(4) 'n Oortreding van die bepalings van hierdie regulasie kan die verbeuring van punte tot gevolg hê.

Straf vir Afskryf, ens.

52. 'n Kandidaat wat gedurende die eksamen 'n ongeoorloofde boek of papier raadpleeg of van iemand anders afskryf of aan iemand anders hulp verleen of inligting verstrek of op enige wyse met iemand anders in verbinding tree of wat enige deel van die probleme afskryf met die doel om hulle uit die eksamenkamer te neem, word geag in die eksamen te gedruip het en mag 6 maande lank nie vir hereksamen aangeneem word nie. 'n Kandidaat wat aan 'n tweede oortreding skuldig is, mag nie toegelaat word om binne 12 maande na sodanige tweede oortreding eksamen te doen nie. Elke oortreding moet deur die eksaminator by die Sekretaris aangemeld word.

Kandidate kan van Eie Metodes Gebruik Maak.

53. 'n Kandidaat kan die verskillende probleme uitwerk volgens enige metode waaraan hy gewoon is, mits die beginsel van sodanige metode reg is. Vir duidelike stellings, beredenering en berekening in die oplossing van die probleme sal gepaste erkenning verleen word.

Vereiste Juisheidsgraad.

54. (1) In berekenings met die oog op die bepaling van 'n skip se posisie word van 'n kandidaat verwag om tot 0.2 van 'n boogminuut en tot die naaste tydseconde te werk.

(2) Die berekeningsmetode wat vir die verkryging van 'n standlyn gebruik word, moet in staat wees om enige antwoord binne 0.5 van 'n myl te verstrek.

(3) By die berekening van kompasfoute, peilings en koerse moet die antwoord tot binne 0.25 van 'n graad uitgewerk word, maar in kaartwerk is 0.5 van 'n graad voldoende.

(4) By die berekening van die korreksie om op dieptepeilings toe te pas, is dit voldoende as die kandidaat se antwoord binne 'n halfvoet van 'n juiste uitslag kom.

Korreksies Volgens Tafels.

55. In die vraestel oor die Grondbeginsels van Navigasie vir Tweede Navigasie-offisier van 'n skip op vreemde vaart word die korreksie van hoogtes volgens totale korreksietafels nie toegelaat nie. Elke korreksie moet op die kandidaat se eksamenskrifte verskyn.

Kompasdeviasie.

56. By die beantwoording van vrae oor die tentatiewe metode vir kompasstelling kan die kandidaat met behulp van Beall se kompasdeviaskoop getoets word.

Sekstant.

57. Vir bekwaamheidsertifikaat van alle grade moet die eksamen oor die sekstant mondeling en prakties afgeneem word. 'n Kandidaat moet beide vertikale en horisontale hoeke meet en prakties met betrekking tot sy kennis van die stelling en gebruik van die verskillende skroewe geëksamineer word; hy moet juiste aflesings op en buite die boog kan doen en die indeksfout beide volgens die horison en volgens die son kan vind.

Verkeersreëls.

58. (1) In die eksamen oor die Botsing- en Noodseine-regulasies, 1965, moet die kandidaat die eksaminator daarvan oortuig dat hy die volle betekenis, inhoud en praktiese toepassing van hierdie regulasies begryp.

(2) Die blote vermoë van die kandidaat om die regulasies woordeliks te herhaal, is nie voldoende om te verseker dat hy die eksamen deurkom nie.

(3) All work other than sketching and drawing shall be done in ink.

(4) A contravention of the provisions of this regulation may involve loss of marks.

Penalty for Copying, etc.

52. Any candidate who refers to any unauthorised book or paper, or copies from another or affords any assistance or gives any information to another, or communicates in any way with another during the time of examination, or copies any part of the problems for the purpose of taking them out of the examination room, shall be regarded as having failed the examination, and shall not be accepted for re-examination for a period of 6 months. A candidate guilty of a second offence shall not be allowed to be examined until 12 months have elapsed after such second offence. Each offence shall be reported to the Secretary by the Examiner.

Candidates May Use Own Method.

53. A candidate may work out the various problems according to any method which he has been accustomed to use; provided that such method is correct in principle. Suitable recognition will be given for clear statements, reasoning and calculation in solving the problems.

DEGREE OF PRECISION REQUIRED.

54. (1) When making calculations for obtaining a ship's position, a candidate is expected to work to 0.2 of a minute of arc and to the nearest second of time.

(2) The method of calculation used in obtaining a position line must be capable of giving any answer within 0.5 of a mile.

(3) In the calculation of compass errors, bearings and courses, the answer shall be worked out to within 0.25 of a degree, but in chart work 0.5 of a degree is sufficient.

(4) In calculating the correction to apply to soundings, it shall be sufficient if the candidate's answer is within half a foot of a precise result.

Corrections by Tables.

55. In the Principles of Navigation Paper for Second Navigating Officer of a foreign-going ship, the correction of altitudes by total correction tables shall not be allowed. Every correction must appear on the papers of the candidate.

Compass Deviation.

56. In answering questions on the tentative method of compass adjustment, the candidate may be tested by Beall's Compass Deviascope.

Sextant.

57. Examination in the sextant shall be conducted orally and practically for all grades of certificates of competency. A candidate shall be required to measure both vertical and horizontal angles, and shall be examined practically as to his knowledge of the adjustments and the use of the various screws; he shall be required to read correctly on and off the arc and to find the index error both by the horizon and by the sun.

Rule of the Road.

58. (1) In examination on the Collision and Distress Signals Regulations, 1965, the candidate shall satisfy the examiner that he grasps the full significance, content and practical application of those regulations.

(2) Mere ability on the part of the candidate to repeat the regulations word by word shall not be sufficient to ensure his passing the examination.

Afwesigheid by Mondelinge Eksamens.

59. (1) 'n Kandidaat vir 'n bekwaamheidsertifikaat van enige graad, uitgesonderd 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—moet sy opwagting vir die mondelinge eksamen maak ongeag of hy die skriftelike deel deurgekom het of nie.

(2) 'n Kandidaat wat hom nie op die bepaalde tyd vir die mondelinge eksamen aanmeld nie, word geag in die mondelinge eksamen te gedruip het tensy hy 'n dokter-sertifikaat of ander bevredigende bewys lewer dat hy nie in staat was om op te daag nie, en hy kan na gelang van omstandighede ook die straf oploop dat hy geag word in die skriftelike eksamen te gedruip het.

Eksamen in Seine.

60. (1) 'n Kandidaat met die bevoegdheid om geëksamineer te word vir enige graad sertifikaat waarvoor seining nodig is, kan hierdie deel van die eksamen binne die 6 maande onmiddellik voordat en nadat hy homself vir die skriftelike en mondelinge eksamens aanmeld, aflê gedurende enige week waarin eksamens vir bekwaamheid-sertifikaat afgeneem word.

(2) Indien die deel van die eksamen wat op seining betrekking het, afsonderlik afgelê word, moet die spesiale eksamengeld voorgeskryf by regulasie 64 vir elke poging betaal word.

Straf vir Oortreding van Regulasies.

61. Indien 'n kandidaat van hierdie regulasies oortree en daar nie by hierdie regulasies vir sodanige oortreding 'n ander straf voorgeskryf word nie, of indien 'n kandidaat onbeskof is teenoor 'n eksaminator of hom in of by die eksamenkamer onordelik of onbehoorlik gedra, kan die eksaminator hom behandel asof hy in die eksamen gedruip het, en indien hy aldus behandel word, kan hy 3 maande lank nie as kandidaat vir hereksaminering aanvaar word nie.

HOOFSTUK VI.

EKSAMENGELDE.

Wanneer om Gelde te Betaal.

62. 'n Kandidaat wat 'n eksamen vir 'n bekwaamheid-sertifikaat wil aflê, moet die eksamengeld voor die datum van die eksamen betaal, en geen kandidaat mag toegelaat word om die eksamen te doen nie tensy hy die kwitansie vir die eksamengelde aan die eksaminator toon.

Waar om Gelde te Betaal.

63. Die eksamengeld moet aan die bevoegde beampte betaal word en dié moet 'n kwitansie uitreik waarop vermeld word—

- (a) die naam van die kandidaat;
- (b) die betaalde bedrag; en
- (c) die graad van die eksamen.

Tabel van Eksamengelde.

64. Die betaalbare eksamengelde is as volg:—

	R
(a) Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.....	8.00
(b) Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton.....	12.00
(c) Tweede Navigasie-offisier van 'n skip op vreemde vaart.....	12.00
(d) Hoofnavigasie-offisier van 'n skip op vreemde vaart.....	12.00
(e) Gesagvoerder van 'n skip op vreemde vaart.....	20.00
(f) Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad:—	
(i) Vir die volle eksamen.....	32.00
(ii) Vir of Deel A of Deel B afsonderlik afgelê....	16.00

Non-Attendance at Oral Examinations.

59. (1) A candidate for any grade of certificate of competency, other than Master of a foreign-going ship—Special Grade, shall proceed to the oral examination whether or not he has passed in the written portion.

(2) A candidate who does not report for the oral examination at the time appointed shall, unless he produces a medical certificate or other satisfactory evidence of his inability to attend, be regarded as having failed in the oral examination and may also, depending upon circumstances, incur the penalty of being regarded as having failed in the written examination.

Examination in Signalling.

60. (1) A candidate who is eligible for examination for any grade of certificate in which signalling is required, may take this part of the examination during any week in which examinations for certificates of competency are held within the 6 months immediately before and after he presents himself for examination in the written and oral portions.

(2) If the part of the examination which relates to signalling is taken separately, the special fee prescribed by regulation 64 shall be paid for each attempt.

Penalty for Breach of Regulations.

61. If a candidate contravenes any of these regulations other than a regulation for the contravention of which another penalty is by these regulations prescribed, or is insolent to an examiner, or conducts himself in a disorderly or improper manner in or about the examination room, the examiner may treat him as having failed the examination, and if he is so treated he shall not be accepted for re-examination for a period of 3 months.

CHAPTER VI.

EXAMINATION FEES.

When to Pay Fees.

62. A candidate for examination for a certificate of competency shall pay the examination fee prior to the date of the examination and no candidate shall be allowed to sit for the examination unless he produces to the examiner the receipt for the fee paid.

Where to Pay Fees.

63. The fee for examination shall be paid to the proper officer who shall issue a receipt stating—

- (a) the name of the candidate;
- (b) the amount paid; and
- (c) the grade of the examination.

Table of Fees.

64. The fees payable for examination shall be as follows:—

	R	c
(a) Navigating Officer of a coasting ship of 100 or more gross register tons.....	8.00	
(b) Master of a coasting ship of 100 or more gross register tons.....	12.00	
(c) Second Navigating Officer of a foreign-going ship.....	12.00	
(d) Chief Navigating Officer of a foreign-going ship.....	12.00	
(e) Master of a foreign-going ship.....	20.00	
(f) Master of a foreign-going ship—Special Grade:—		
(i) For the full examination.....	32.00	
(ii) For either Part A or Part B taken individually	16.00	

Bovermelde gelde sluit in die geld vir die eksamen in seine, asook die geld vir die gesigstoetse vir kleur en vorm, indien hulle terselfdertyd as die res van die eksamen afgelê word.

Indien 'n kandidaat net in die skriftelike of in die mondelinge deel van die eksamen hereksamineer word, word die helfte van bovermelde gelde gevorder, en dit dek ook 'n eksamen in seine indien dié terselfdertyd afgelê word. Waar 'n kandidaat die eksamen in seine afsonderlik van een of albei die dele van die eksamen aflê, word 'n spesiale eksamengeld van R5 vir elke poging gevorder.

Terugbetaling van Eksamengelde.

65. (1) Indien 'n kandidaat weens omstandighede buite sy beheer nie in staat is om die eksamen af te lê waarvoor hy eksamengeld betaal het nie, kan hy skriftelik by die bevoegde beampte om terugbetaling van sodanige eksamengeld aansoek doen. Indien die bevoegde beampte van mening is dat die aansoek op redelike gronde berus, moet hy die aansoek deurstuur aan die Sekretaris, wat die terugbetaling kan magtig.

(2) Indien 'n kandidaat nie 'n eksamen ooreenkomstig regulasie 8 voltooi nie, kan hy skriftelik by die bevoegde beampte aansoek doen om terugbetaling van die eksamengeld wat deur hom betaal is en sodanige geld moet aan hom terugbetaal word.

(3) Indien 'n kandidaat wat die gelde soos by regulasie 64 voorgeskryf vir 'n eksamen vir 'n bekwaamheidsertifikaat betaal het, een of albei dele van die gesigstoetse vir kleur en vorm dui en verkies om die res van die eksamen nie te voltooi nie, kan hy skriftelik by die bevoegde beampte aansoek doen om terugbetaling van die eksamengeld wat deur hom betaal is en sodanige geld, min 50 sent, moet aan hom terugbetaal word.

(4) Indien 'n kandidaat nie in enige deel van die eksamen slaag nie, word, behoudens die bepalings van hierdie regulasie, geen deel van die eksamengeld aan hom terugbetaal nie.

HOOFSTUK VII.

UITREIKING VAN SERTIFIKATE.

Magtiging vir Lewering van Bekwaamheidsertifikaat.

66. 'n Kandidaat wat die eksamen deurkom, moet van die eksaminator 'n behoorlik ingevulde vorm T.V. 5/106, soos in Aanhangsel 1 uiteengesit, ontvang. 'n Kandidaat wat gedeeltelik in die eksamen slaag of druipt, moet van die eksaminator 'n behoorlik ingevulde vorm T.V. 5/107, soos in Aanhangsel 1 uiteengesit, ontvang en dié moet behou en aan die eksaminator getoon word wanneer hy hom weer vir eksamen aanmeld.

Vorm van Bekwaamheidsertifikaat of Dienssertifikaat.

67. Behoudens die bepalings van regulasie 69 moet elke bekwaamheidsertifikaat in een van die toepaslike vorms wees soos in Aanhangsel 4 uiteengesit, en moet elke dienssertifikaat in die vorm wees soos in Aanhangsel 5 uiteengesit.

Uitreiking van 'n ander Bekwaamheidsertifikaat as dié van 'n Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

68. As 'n kandidaat vir 'n ander bekwaamheidsertifikaat as dié van Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—die ervaring opgedoen, die toepaslike bekwaamende diens verrig en die toepaslike eksamen voorgeskryf by hierdie regulasies deurgekom het, moet die sertifikaat behoudens die bepalings van hierdie regulasies aan hom uitgereik word; met dien verstande dat indien dit ooreenkomstig hierdie regulasies vir die kandidaat nodig is om 'n bekwaamheid- of 'n dienssertifikaat te hou ten einde die eksamen te kan aflê, hy laasgenoemde sertifikaat aan die eksaminator moet afgee.

The above fees include the fee for the examination in signalling as well as the fee for the colour and form vision tests, if taken at the same time as the rest of the examination.

If a candidate is re-examined only in the written or in the oral part of the examination, one half of the above fees shall be charged, which shall cover also an examination in signalling if taken at the same time.

Where a candidate takes the examination in signalling separately from one or both of the parts of the examination, a special fee of R5 shall be charged for each attempt.

Refund of Fees.

65. (1) If through circumstances beyond the control of a candidate he is unable to undergo the examination for which a fee has been paid by him, he may apply, in writing, to the proper officer for a refund of such fee. If the proper officer considers that the application is based upon reasonable grounds, he shall transmit it to the Secretary, who may authorise the refund.

(2) If a candidate does not, in terms of regulation 8, complete an examination, he may apply, in writing, to the proper officer for a refund of the fee paid by him, and such fee shall be refunded to him.

(3) If a candidate who has paid the fee prescribed in regulation 64 for an examination for a certificate of competency, fails to pass in either or both parts of the colour and form vision tests and elects not to complete the rest of the examination, he may apply in writing to the proper officer for a refund of the fee paid by him, and such fee less 50 cents shall be refunded to him.

(4) Subject to the provisions of this regulation, if a candidate fails to pass any part of the examination, no part of the fee shall be refunded to him.

CHAPTER VII.

ISSUE OF CERTIFICATES.

Authority for Delivery of Certificates of Competency.

66. A candidate who passes the examination shall receive from the examiner a form T.V. 5/106 set forth in Annex 1, duly completed. A candidate who is partially successful or unsuccessful in the examination, shall receive from the examiner a form T.V. 5/107 set forth in Annex 1, duly completed, which must be retained and produced to the examiner when he next presents himself for examination.

Form of Certificate of Competency or Certificate of Service.

67. Subject to the provisions of regulation 69, every certificate of competency shall be in one of the appropriate forms set forth in Annex 4 and every certificate of service shall be in the form set forth in Annex 5.

Issue of a Certificate of Competency other than as Master of a Foreign-going Ship.—Special Grade.

68. If a candidate for a certificate of competency, other than as Master of a foreign-going ship—Special Grade, has gained the experience and performed the appropriate qualifying service and has passed the appropriate examination prescribed by these regulations, the certificate shall, subject to the provisions of these regulations, be issued to him: Provided that if in terms of these regulations, it is necessary for the candidate to hold any certificate of competency or service in order that he may be qualified to sit for the examination, he surrenders the last-mentioned certificate to the examiner.

Endossering van 'n Bekwaamheidsertifikaat.

69. (1) Indien iemand die houer is van 'n bekwaamheidsertifikaat wat hom die reg gee om in 'n bepaalde graad of hoedanigheid op 'n skip op vreemde vaart op te tree en hy kwalifiseer vir 'n bekwaamheidsertifikaat wat hom die reg gee om in 'n bepaalde graad of hoedanigheid op 'n kusvaarder op te tree, kan laasgenoemde sertifikaat waarvoor hy aldus gekwalifiseer het, die vorm aanneem van 'n endossement op die sertifikaat waarvan hy reeds die houer is, welke endossement die graad of hoedanigheid op die kusvaarder moet meld waarin sy verdere kwalifikasie hom die reg gee om op te tree.

(2) Indien iemand die houer is van 'n bekwaamheidsertifikaat wat hom die reg gee om in 'n bepaalde graad of hoedanigheid op 'n kusvaarder op te tree en hy kwalifiseer vir 'n bekwaamheidsertifikaat wat hom die reg gee om in 'n bepaalde graad of hoedanigheid op 'n skip op vreemde vaart op te tree, kan op laasgenoemde sertifikaat waarvoor hy aldus gekwalifiseer het, 'n verdere sertifikaat geëndosseer word waarin die graad of hoedanigheid vermeld word waarin hy ook geregtig is om op 'n kusvaarder op te tree.

(3) Aan iemand wat die houer is van 'n bekwaamheidsertifikaat wat hom die reg gee om in 'n bepaalde graad of hoedanigheid op 'n skip op vreemde vaart op te tree, kan 'n ander sertifikaat uitgereik word wat hom magtig om op 'n kusvaarder in die graad of hoedanigheid op te tree waarin hy kragtens die sertifikaat waarvan hy reeds die houer is, mag optree, en sodanige latere sertifikaat kan die vorm aanneem van 'n endossement op sodanige vroeëre sertifikaat.

(4) Aan 'n kandidaat wat die eksamen deurmaak wat by regulasie 72 (4) voorgeskryf word, moet 'n sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart uitgereik word en daarop moet 'n verdere sertifikaat geëndosseer word ten effekte dat hy ook geregtig is om as Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton op te tree.

Uitreiking van 'n Sertifikaat van Bekwaamheid as Gesagvoerder van 'n Skip op Vreemde Vaart—Spesiale Graad.

70. 'n Sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad—moet uitgereik word aan 'n kandidaat wat kragtens die bepalings van die Wet daartoe geregtig is of behoudens die bepalings van hierdie regulasies die voorgeskrewe eksamen deurmaak het; met dien verstande dat 'n kandidaat wat die voorgeskrewe eksamen deurmaak het, sy sertifikaat van bekwaamheid as Gesagvoerder van 'n skip op vreemde vaart aan die eksaminator afgee.

Dienssertifikaat.

71. (1) 'n Applikant om 'n dienssertifikaat ooreenkomstig artikel 80 van die Wet moet die aansoekvorm T.V. 5/105, soos in Aanhangsel 1 uiteengesit, met vermelding van al die nodige besonderhede invul en dit saam met die bedrag van R4 aan die bevoegde beambte oorhandig of pos. Die bevoegde beambte moet die aansoek aan die Sekretaris deurstuur.

(2) Indien die aansoek om 'n dienssertifikaat nie slaag nie, moet die bedrag van R4 aan die applikant terugbetaal word.

HOOFSTUK VIII.

LEERPLANNE.

Algemeen.

72. (1) Die leerplanne vir die verskillende eksamens waarvan in regulasies 15 tot 20 melding gemaak word, is soos in Aanhangsel 3 uiteengesit.

(2) In elke vraestel dwarsdeur die leerplanne kan vraestelle gestel word waarin een of meer paragrawe saamgevat word.

Endorsement of a Certificate of Competency.

69. (1) If a person holds a certificate of competency which entitles him to act in a particular grade or capacity in a foreign-going ship and qualifies for a certificate of competency entitling him to act in a particular grade or capacity in a coasting ship, the latter certificate for which he has so qualified may be in the form of an endorsement on the certificate which he already holds stating the grade or capacity in the coasting ship in which his further qualification entitles him to act.

(2) If a person holds a certificate of competency which entitles him to act in a particular grade or capacity in a coasting ship and qualifies for a certificate of competency entitling him to act in a particular grade or capacity in a foreign-going ship, the latter certificate for which he has so qualified may be endorsed with a further certificate stating the grade or capacity in a coasting ship in which he is also entitled to act.

(3) A person who holds a certificate of competency which entitles him to act in a particular grade or capacity in a foreign-going ship, may be issued with another certificate authorizing him to act in the grade or capacity in a coasting ship in which he, on the strength of the certificate which he already holds, is authorized to act, and such latter certificate may be in the form of an endorsement on such former certificate.

(4) A candidate who passes the examination prescribed in regulation 72 (4) shall be issued with a certificate of competency as Chief Navigating Officer of a foreign-going ship endorsed with a further certificate stating that he is also entitled to act as Master of a coasting ship of 100 or more gross register tons.

Issue of a Certificate of Competency as Master of a Foreign-going Ship—Special Grade.

70. A certificate of competency as Master of a foreign-going ship—Special Grade, shall be issued to a candidate who is entitled thereto in accordance with the provisions of the Act, or, subject to the provisions of these regulations, has passed the prescribed examination: Provided that a candidate who has passed the prescribed examination shall surrender his certificate of competency as Master of a foreign-going ship to the examiner.

Certificate of Service.

71. (1) An applicant for a certificate of service in terms of section 80 of the Act shall complete the form of application T.V. 5/105 set forth in Annex 1, giving the necessary particulars, and shall hand or post it to the proper officer together with the fee of R4. The proper officer shall forward the application to the Secretary.

(2) If the application for a certificate of service is unsuccessful, the fee of R4 shall be refunded to the applicant.

CHAPTER VIII.

SYLLABUSES.

General.

72. (1) The syllabuses for the various examinations referred to in regulations 15 to 20 shall be as set forth in Annex 3.

(2) In each paper throughout the syllabuses, questions may be set combining one or more paragraphs.

(3) Die leerplan vir 'n hoër graad in beide skriftelike en mondelinge eksamens word geag daardie vak se leerplan (indien enige) vir sertifikate van 'n laer graad in te sluit.

(4) 'n Kandidaat wie se bekwaamende diens hom daartoe geregtig maak om vir 'n sertifikaat van bekwaamheid as Hoofnavigasie-offisier van 'n skip op vreemde vaart geëksamineer te word, kan ongeag die bepalings van hierdie regulasies tegelykertyd vir vermeldde sertifikaat en 'n sertifikaat van bekwaamheid as Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton geëksamineer word. In so 'n geval moet hy oor die hele leerplan vir Hoofnavigasie-offisier van 'n skip op vreemde vaart en ook oor afdeling 3 van die mondelinge eksamen van die leerplan vir Gesagvoerder van 'n kusvaarder van 100 of meer bruto registerton geëksamineer word.

(3) The syllabus for a higher grade in both written and orals shall be regarded as including the syllabus of that subject (if any) for certificates of lower grade.

(4) A candidate whose qualifying service entitles him to be examined for a certificate of competency as Chief Navigating Officer of a foreign-going ship, may, notwithstanding the provisions of these regulations, be examined simultaneously for the said certificate and a certificate of competency as Master of a coasting ship of 100 or more gross register tons. In such an event, he shall be examined in the entire syllabus for Chief Navigating Officer of a foreign-going ship and also in section 3 of the oral examination of the syllabus for Master of a coasting ship of 100 or more gross register tons.

AANHANGSEL 1

LYS VAN VORMS WAT IN HIERDIE REGULASIES VERSKYN.

Regulasie 5.—Aansoek om geëksamineer te word vir 'n sertifikaat van bekwaamheid as.....	T.V. 5/101.
Regulasie 10.—Aansoek om 'n gewaarmerkte afskrif van 'n bekwaamheid- of bevoegdheidsertifikaat of 'n dienssertifikaat.....	T.V. 5/103.
Regulasie 13.—Aansoek om die gesigstoets vir kleur en vorm te ondergaan.....	T.V. 5/104.
Regulasie 24.—Waghoudienssertifikaat.....	T.V. 5/108.
Regulasie 66.—Magtiging vir lewering van bekwaamheidsertifikaat of bevoegdheidsertifikaat.....	T.V. 5/106.
Regulasie 66.—Eksamenuitslae.....	T.V. 5/107.
Regulasie 71.—Aansoek om dienssertifikaat.....	T.V. 5/105.

T.V. 5/101.

REPUBLIEK VAN SUID-AFRIKA.

(Republiekwapen).

DEPARTEMENT VAN VERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.

AANSOEK OM GEËKSAMINEER TE WORD VIR 'N SERTIFIKAAT VAN BEKWAAMHEID AS.....

*(Vermeld hier graad van sertifikaat verlang.)

* Hierdie vorm is bedoel vir gebruik wanneer die verlangde sertifikaat tot een van die volgende grade behoort:—

Gesagvoerder—Spesiale Graad, Gesagvoerder, Hoofnavigasie- of Tweede Navigasie-offisier van 'n skip op vreemde vaart.

Gesagvoerder of Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.

Skipper, Stuurman of Bootsman van 'n vissersboot, robbevaarder of walvisvaarder met landbasis van 100 of meer bruto registerton.

Skipper of Stuurman van 'n kusvaarder, of 'n vissersboot, robbevaarder of walvisvaarder met landbasis van minder as 100 bruto registerton.

Volgnommer.....

Hawe.....

A.—Naam, ens., van kandidaat:—

(1) Voornaam (voluit).			(2) Familienaam.	(3) Permanente adres, met vermelding van stad, straat, huisnummer en naam van persoon by wie woonagtig.

Geboortedatum.			(7) Geboorteplek. (Stad en land.)	(8) Nasionaliteit. (Indien 'n burger ingevolge registrasie of naturalisasie, vermeld nommer van sertifikaat).
(4) Dag.	(5) Maand.	(6) Jaar.		

(See page 46 for commencement of English Schedule.)

B.—Besonderhede van alle vorige sertifikate (indien enige), ongeag of hulle in die Republiek of elders uitgereik is.

(9) No.	(10) Bekwaamheid of diens.	(11) Graad: Vreemde vaart, kusvaart, visvangs, ander.	(12) Waar uitgereik.	(13) Datum waarop geslaag.	(14) Indien te eniger tyd opgeskort of ingetrek, vermeld deur watter hof of gesag.	(15) Datum.	(16) Rede.

C.—Sertifikaat tans verlang.

(17) Graad: Vreemde vaart, kusvaart, vis- vangs, ander.	(18) Hawe waar kandidaat geëksamineer wil word.	(19) Kantoor waarheen dit gestuur moet word.

D.—Indien die kandidaat tevore vir die sertifikaat wat nou verlang word, geëksamineer is of die gesigstoetse vir kleur en vorm ondergaan het, moet hy hier met vermelding van die datum, plek en uitslag van die eksamen, besonderhede verstrek van die laaste keer toe hy geëksamineer is. As hy nie vir 'n sertifikaat geëksamineer is of die gesigstoetse vir kleur en vorm afgelê het nie, moet hy daardie feit meld deur dit dwarsoor hierdie afdeling te skryf. 'n Kandidaat wat nie die houer van 'n bekwaamheidsertifikaat is nie, en te eniger tyd in die gesigstoetse vir kleur en vorm gedruip het, moet hier meld wanneer en waar hy aldus gedruip het.

(20) Dag.	(21) Maand.	(22) Jaar.	(23) Hawe.	Vak waarin geëksamineer en uitslag.			
				(24) Gesigstoetse vir kleur en vorm.	(25) Skriftelik.	(26) Mondeling.	(27) Seine.

E.—Sertifikaat van eksaminator.

Eksamendatum en -plek.		(30) Lettertoets. *	(31) Lanterntoets. *	(32) Skriftelik. *	(33) Mondeling. *	(34) Seine. *	(35) Indien in mondelinge eksamen gedruip, meld hoeveel verdere seediens (indien enige) verrig moet word.	(36) Opmerkings (bv. sertifikaat waar- voor geslaag, bevoegdheid vir volgende eksamen, ens.).
(28) Datum.	(29) Plek.							

* Vul in „Geslaag”, „Gedruip”, of „Nie geëksamineer nie”, na gelang van die geval, in elke kolom. Skryf in die geval van kleur-gesig „Nie geëksamineer nie” indien die kandidaat reeds 'n bekwaamheidsertifikaat hou.

F.—Persoonsbeskrywing van kandidaat.

Lengte.		Kleur van—		(41) Ras.	(42) Persoonlike merke of eienaardighede (indien enige).
(37) Voet.	(38) Duim.	(39) Oë.	(40) Hare.		

Hierby sertifiseer ek dat die besonderhede in afdelings E en F juis is en dat die kandidaat bevredigende getuigskrifte en bewys van diens gelewer het.

By die hawe _____ hierdie _____ dag van _____ 19__

Eksaminator.

G.—Volledige lys van getuigskrifte en opgawe van diens vandat hy die eerste maal ter see gegaan het, of vanaf die datum van die huidige sertifikaat. (Nie op Gesagvoerder van 'n skip of vreemde vaart—Spesiale Graad—van toepassing nie.)

Die getuigskrifte, wat hieraan vasgeheg moet word, moet in volgorde *deur die kandidaat* genommer en die ooreenstemmende nommers *deur hom* in onderstaande kolom (43) ingeskryf word.

(43) Getal getuigskrifte (indien enige).	Besonderhede van skip.			
	(44) Naam van skip.	(45) Stoom, motor, ander.	(46) Tonnemaat.	(47) Registrasiehawe en amptelike nommer van skip.

Besonderhede van applikant se diens.

(48) Hoedanigheid.	(49) Aanvangsdatum.	(50) Datum van beëindiging.	Tydperk van diens.			(54) Handel waarin werksaam.	(55) Opmerkings.	(56) Voorletters van verifieerder.
			(51) Jare.	(52) Maande.	(53) Dae.			
Totale diens.....								
Dienstyd waarvoor amptelike bewys gelewer word.....								
Dienstyd waarvoor geen bewys gelewer word nie.....								

H.—Verklaring wat deur kandidaat afgelê moet word:—

N.B.—Die kandidaat se aandag moet hier gevestig word op die feit dat enige valse voorstelling kragtens artikel 315 van Wet 57/1951 strafbaar is.

Ek verklaar hierby dat die besonderhede in afdelings A, B, C, D en G van hierdie vorm na my beste wete en oortuiging korrek en juis is en ek doen hierdie verklaring in die opregte geloof dat hy juis is.

Gedateer..... hierdie..... dag van..... 19.....

Handtekening van kandidaat.

Voor my verklaar te..... en die bedrag van..... (kwitansie No.....)
ontvang op hede die..... dag van..... 19.....

Handtekening en amptitel van bevoegde beampte of
Kommissaris van Ede.

Die Sekretaris van Vervoer,
Pretoria.

T.V. 5/103.

REPUBLIEK VAN SUID-AFRIKA.

(Republiekwapen.)

DEPARTEMENT VAN VERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.

AANSOEK OM 'N GEWAARMERKTE AFSKRIF VAN 'N BEKWAAMHEID- OF BEVOEGDHEIDSERTIFIKAAT OF DIENSSERTIFIKAAT.

No. van verlore sertifikaat.	Graad van verlore sertifikaat.

Hawe.....

AFDELING A.—NAAM, ENS., VAN APPLIKANT.

Naam. (1)	Adres. (2)	Geboortedatum. (3)	Geboorteplek. (4)

AFDELING B.—BESONDERHEDE VAN LAASTE DIENS.

Naam van laaste skip. (5)	Registrasiehawe en amptelike No. van laaste skip. (6)	Rang of gradering op laaste skip. (7)	Beskrywing van laaste seereis.			
			Van. (8)	Tot. (9)	Begin. (10)	Eindig. (11)

Besonderhede aangaande vaartuie waarop applikant diens gedoen het voor- en nadat die tans verlore sertifikaat aan hom uitgereik is:—

Naam van skip. (12)	Registrasiehawe en amptelike No. (13)	Rang of gradering op skip. (14)	Indien vreemde vaart, in kushandel of in vissersbedryf. (15)	Diens.	
				Begin. (16)	Eindig. (17)

AFDELING C.—BESTEMMING VAN SERTIFIKAAT.

(Moet deur applikant ingevul word.)

Ek versoek dat die gewaarmerkte afskrif van my sertifikaat aan my gelewer word te _____

Handtekening van applikant.

AFDELING D.—VERKLARING WAT DEUR DIE APPLIKANT VOOR DIE BEVOEGDE BEAMPTTE AFGELE MOET WORD.

Ek, _____ van _____, verklaar hierby—

- (1) dat my sertifikaat 'n sertifikaat was van* _____ as _____ en genummer was _____
- (2) dat genoemde sertifikaat onder die volgende omstandighede verloor of vernietig is† _____
- (3) dat die verklarings hierin en in afdelings A en B op die keersy hiervan na my beste wete en oortuiging korrek en waar is.

Handtekening van applikant.

VERKLAAR VOOR MY TE _____ en die hernuwingsgeld van _____ (kwitansie No. _____) ontvang hierdie _____ dag van _____ 19 _____

Handtekening en ampstitel van bevoegde beampte.

Die Sekretaris van Vervoer,
Pretoria.

* Voeg in die woord „Bekwaamheid”, „Bevoegdheid”, of „Diens” en die graad.
† Meld hier die plek, datum en oorsaak van die verlies van die sertifikaat.

T.V. 5/104.

REPUBLIEK VAN SUID-AFRIKA.

(Republiekwapen.)

DEPARTEMENT VAN VOERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.
AANSOEK OM DIE GESIGSTOETSE VIR KLEUR EN VORM TE ONDERGAAN.

Hawe _____ Volgnommer _____

PERSOONLIKE BESONDERHEDE VAN KANDIDAAT.

Familienaam (met blokletters) _____ Voorname (met blokletters) _____
Geboortedatum _____ Geboorteplek _____ Gradering _____
Lengte _____ voet _____ duim. Kleur van— oë _____ hare _____ Ras _____
Persoonlike merke of eienaardighede _____ Adres _____

BESONDERHEDE VAN SEEDIENS.

Indien kandidaat seediens verrig het, meld—

Hoeveel jaar en in watter hoedanigheid.		Graad van bekwaamheidsertifikate en datums waarop toegeken.	
Jaar.	Hoedanigheid.	Graad.	Datum.

Indien kandidaat nie seediens verrig het nie, meld—

Of hy op die punt staan om ter see te gaan.

In watter hoedanigheid.

UITSLAG VAN VORIGE GESIGSTOETSE VIR KLEUR EN VORM.

Opmerking.—Indien die kandidaat voorheen die gesigstoets vir kleur en vorm ondergaan het, moet hy hier meld wanneer en waar die laaste toets plaasgevind het en teenoor elke onderwerp invul „Geslaag”, „Gedruip”, „Nie getoets nie”, na gelang van die geval. Indien die kandidaat 'n bekwaamheidsertifikaat hou, moet hy nie die lanterntoets ondergaan nie en moet die inskrywing „Nie getoets nie” teenoor die onderwerp aangebring word.

Dag.	Maand.	Jaar.	Hawe.	Lettertoets.	Lanterntoets.	Meld of uitslag ten opsigte is van— (a) Eerste druipling; (b) Afwysing deur Sekretaris; (c) Druipling in verdere toets.

VERKLARING WAT DEUR KANDIDAAT AFGELE MOET WORD.

Ek, die ondergetekende, _____, verklaar dat bostaande besonderhede na my beste wete en oortuiging juis en waar is, en ek doen hierdie verklaring in die vaste oortuiging dat dit waar is.
Gedateer te _____ hierdie _____ dag van _____ 19____

Handtekening van kandidaat.

Voor my verklaar te _____ hierdie _____ dag van _____ 19____

Handtekening van bevoegde beampte.

SLEGS VIR AMPTELIKE GEBRUIK—GELDE.

Bedrag ontvang.	Kwitansie No.	Datum.

UITSLAG VAN TOETS.

Opmerking.—Vul in „Geslaag”, „Gedruip”, of „Nie getoets nie”, na gelang van die geval. Indien die kandidaat 'n bekwaamheidsertifikaat hou, moet in die geval van 'n lanterntoets „Nie getoets nie” ingeskryf word.

Ek, die ondergetekende, _____, sertifiseer hierby dat bogenoemde kandidaat deur my op die _____ dag van _____ 19____ aan die letter- en lanterntoets onderwerp is met onderstaande uitslag:—

Lettertoets.	Lanterntoets.	Toetredertoets.	Opmerkings.

Datum
Hawe

Handtekening van eksaminator.

EKSAMINATOR SE VERSLAG.

LETTERTOETS.

Opmerkings.—(1) Vier letterkaarte moet in elke toets gebruik word, indien die kandidaat nie op die eerste kaart die vereiste peil bereik nie.
(2) In die geval van druipling in die lanterntoets, moet die eksaminator onderstaande tabel invul en aandui hoeveel foute (indien enige) begaan is, ongeag of die kandidaat in die lettertoets slaag of druipt.

Hoe was die lig toe die kandidaat getoets is.	Meld of die kandidaat albei oë tegelyk gebruik het of net sy beste oog.	Kaarte gebruik.	Getal foute in elke reël van die kaart.						
			1ste reël.	2de reël.	3de reël.	4de reël.	5de reël.	6de reël.	7de reël.
		Eerste.....							
		Tweede.....							
		Derde.....							
		Vierde.....							

LANTERNTOETS.

Opmerking.—Sonder spesiale magtiging mag houters van bekwaamheidsertifikate nie aan die lanterntoets onderwerp word nie.

Groot openings.				Klein openings.			
Getal op skywe getoon.	Genoem deur kandidaat.	Getal op skywe getoon.	Genoem deur kandidaat.	Getal op skywe getoon.	Genoem deur kandidaat.	Getal op skywe getoon.	Genoem deur kandidaat.
Totale getal ligte getoon:				Totale getal ligte getoon:			

T.V. 5/108.

REPUBLIEK VAN SUID-AFRIKA.

(Republiekwapen.)

DEPARTEMENT VAN VOERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.

WAGHOU-DIENSSERTIFIKAAT.

L.W.—Indien op diens as Eerste Waghough-offisier aanspraak gemaak word, moet die Gesagvoerder meld of die offisier onmiddellik na die Gesagvoerder in rang gekom het. Indien daar net twee waghough-offisiere op die skip was, moet die Gesagvoerder dit op die serti-fikaat vermeld.

Hierby word gesertifiseer dat mnr. _____ diens gedoen het op die skip _____ in die hoedanigheid van *Eerste/Tweede/Derde Waghough-offisier. _____ 'n offisier in *volle/teffektiewe bevel van 'n wag vir agt uit elke 24 uur ter see, behalwe soos hieronder vermeld.

Wagte is nooit gedurende die seereis verdubbel nie.† Wagte is gedurende die volgende datums verdubbel en op geen ander tye nie. _____ Gedurende hierdie tydperk het mnr. _____ as die *senior/junior van twee brugwagoffisiere gedien.§

Handtekening van Gesagvoerder.

* Skrap woorde wat nie van toepassing is nie.

† „Effektiewe bevel van 'n wag” beteken verantwoordelikheid vir die wag, maar dit sluit nie toevallige toesig deur 'n senior offisier uit nie, met dien verstande dat die senior offisier nooit bevel van die wag oorneem nie.

‡ Skrap hierdie paragraaf indien wagte te eniger tyd gedurende die seereis verdubbel is.

§ Skrap hierdie paragraaf indien wagte nooit gedurende die seereis verdubbel is nie.

SERTIFIKAAT VAN DIENS EN GEDRAG.

Hierby word gesertifiseer dat mnr. _____ diens gedoen het as _____ op die skip _____ onder my bevel vanaf _____ tot _____ en dat sy gedrag gedurende hierdie tydperk* _____

Datum _____

Handtekening van Gesagvoerder.

* Hier moet die Gesagvoerder in sy eie handskrif sy opmerkings aangaande die gedrag, bekwaamheid en matigheid van die offisier inskryf.

T.V. 5/106.

No.

MAGTIGING VIR LEWERING VAN 'N BEKWAAMHEIDCERTIFIKAAT OF BEVOEGDHEIDCERTIFIKAAT.

Naam van applikant _____

Volgnommer _____

Graad waarin geslaag _____

Magtiging aan bogemelde kandidaat verleen om sy *bekwaamheidsertifikaat/bevoegdheidsertifikaat te ontvang van die bevoegde beampte by die hawe.

Datum _____

Eksaminator _____

* Skrap die woord wat nie van toepassing is nie.

REPUBLIEK VAN SUID-AFRIKA.

(Republiekwapen.)

DEPARTEMENT VAN VERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.

MAGTIGING VIR LEWERING VAN 'N BEKWAAMHEIDCERTIFIKAAT OF BEVOEGDHEIDCERTIFIKAAT.

(L.W.—Hierdie magtiging is onderworpe aan die goedkeuring van die Sekretaris van Vervoer, Pretoria.)

Naam van applikant _____ Graad waarin geslaag _____

Lengte: _____ voet _____ duim. Kleur van: Oë _____ Hare _____

Ras _____

Handtekening van applikant.

Lewer asb. aan bogemelde persoon die *bekwaamheidsertifikaat/bevoegdheidsertifikaat nadat hy die besonderhede wat daarin vereis word, ingevul het, asook getuigskrifte of ander dokumente wat namens hom deur die Sekretaris van Vervoer, Pretoria, aan u gestuur is.

Hawe _____ Datum _____ 19 _____

Aan _____ Handtekening van eksaminator.

* Skrap die woord wat nie van toepassing is nie.

T.V. 5/107.

Hawe _____
 Naam van kandidaat _____
 Aanvangsdatum van laaste eksamen _____
 Verwysing na korrespondensie (indien enige) _____
 Volgnommer _____
 Skriftelik _____
 Mondeling _____
 Seine _____
 Datum waarop hereksamen gedoen kan word _____
 Paraaf van eksaminator _____
 Uitreikingsdatum _____

REPUBLIEK VAN SUID-AFRIKA.
 (Republiekwapen.)

DEPARTEMENT VAN VERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.
 UITSLAG VAN EKSAMEN VIR GESAGVOERDERS—SPESIALE GRAAD-
 GESAGVOERDERS, NAVIGASIE-OFFISIERS, SKIPPERS, STUURMANNE,
 BOOTMANNE, SEEMASJINISTE EN ASSISTENT-SEEMASJINISTE.

N.B.—Hierdie vorm moet die kandidaat by 'n latere eksamen saam met sy dokumente inlewer.

Naam van kandidaat _____ Volgnommer _____
 Verwysing na korrespondensie (indien enige) _____

Datum.	Hawe.	Graad.	Eksamen.	Skriftelik. *	Mondeling. *	Seine. *
			Eerste poging...			
			Tweede poging..			
			Derde poging...			

Kantoorstempel.

Datum waarop hereksamen gedoen kan word _____

Handtekening van kandidaat.

Handtekening van Eksaminator.

* Vul in „Geslaag”, „Gedruip”, of „Nie geëksamineer nie”.

T.V. 5/105.

REPUBLIEK VAN SUID-AFRIKA.
 (Republiekwapen.)

DEPARTEMENT VAN VERVOER—MARINE-AFDELING.

HANDELSKEEPVAARTWET, 1951 (WET No. 57 VAN 1951), SOOS GEWYSIG.

AANSOEK OM 'N DIENSSERTIFIKAAT.

(Artikel 80 van Wet 57/1951, soos gewysig.)

A.—BESONDERHEDE VAN APPLIKANT.

Familiernaam (met blokketters).	Voorname (met blokketters).	Geboortedatum.	Geboorteplek.	Nasionaliteit.	Adres.

Ek verlang 'n dienssertifikaat as _____ en indien toegeken, moet dit vir uitreiking aan my
 aan die bevoegde beampte te _____ gestuur word.

B.—BESONDERHEDE VAN SEEDIENS.

Besonderhede van vaartuig.

Naam van vaartuig.	Stoom, motor, ander.	Bruto tonnemaat.	Perdekrag van masjiene.	Registrasiehawe en amptelike No.; of registrasieno. van vaartuig.	Soort handel waarin gebesig (meld of vissersbedryf, kus- handel, ander).

Besonderhede van applikant se seediens.

Hoedanigheid.	Van.	Tot.	Diensttermyn.			Opmerkings.
			Jaar.	Maande.	Dae.	
Totale seediens.....						
Dienstyd waarvoor bewys nou voorgelê is.....						
Dienstyd waarvoor geen bewys voorgelê is nie.....						

C.—VERKLARING WAT DEUR APPLIKANT AFGELÊ MOET WORD.

Ek, die ondergetekende, _____ verklaar hierby—

- (1) dat die besonderhede in afdelings A en B van hierdie vorm na my beste wete en oortuiging waar en juis is; en
(2) dat ek *(nie) 'n bekwaamheid- of dienssertifikaat het *(nie) *(wat ek nou afgee).

Handtekening van applikant.

(Indien die applikant nie kan skrywe nie, moet hy sy merk in die spasie hierbo maak.)

Voor my verklaar te _____ hierdie _____ dag van _____ 19 _____

Handtekening en ampstitel van bevoegde beampte of kommissaris van ede.

Die bedrag van _____ (kwitansie No. _____) ontvang hierdie _____ dag van _____ 19 _____

Handtekening en ampstitel van bevoegde beampte.

* Skrap wat nie van toepassing is nie.

D.—SERTIFIKAAT VAN EKSAMINATOR.

Datum en plek van van gesigstoetse vir kleur en vorm.		Uitslag.		Persoonsbeskrywing van kandidaat.						Persoonlike merke of eienaardighede (indien enige).
				Lengte.		Kleur van—		Ras.		
Datum.	Plek.	Lettertotoets.	Lanterntotoets.	Voet.	Duim.	Oë.	Hare.			

Hierby sertifiseer ek dat die besonderhede in afdeling D na my beste wete en oortuiging juis is, en 'n dienssertifikaat as _____ behoort na my mening uitgereik te word.

Gedateer te _____ hierdie _____ dag van _____ 19 _____

Datumstempel.

Handtekening van eksaminator.

Aan die Sekretaris van Vervoer,
Pretoria.

E.—SLEGS VIR AMPTELIKE GEBRUIK.

Graad en nommer van sertifikaat uitgereik.	Datum en plek van uitreiking.	Vorige sertifikate afgegee.

AANHANGSEL 2.

GESIGSTOETSE VIR KLEUR EN VORM.

(Sien regulasie 13.)

BESONDERHEDE VAN DIE UITVOERING VAN GESIGSTOETSE VIR KLEUR EN VORM.

(N.B.—Die doel van hierdie toetse is om te verseker dat die kandidaat se gesigsvermoë skerp genoeg is om hom in staat te stel om die ligte van skepe ver op die see te sien en reg te identifiseer. Die ondervinding het geleer dat hy vir hierdie doel in staat moet wees om met betrekking tot beide vorm en kleur sekere minimum standaarde te behaal. Twee toetse word toegepas, naamlik 'n letter- en 'n lanterntoets, en besonderhede daarvan word hieronder verstrek. Die lettertoets is alleen 'n toets uit die oogpunt van vorm, en die lanterntoets is 'n gekombineerde gesigstoets vir vorm en kleur.)

ALGEMEEN.

- Die toetse moet uitgevoer word onder die strenge, persoonlike toesig van die eksaminator, wat al die foute moet opteken wat die kandidaat in beide die lettertoets en die lanterntoets begaan.
- Brille nie toegelaat nie.*—Terwyl hulle die gesigstoetse vir kleur en vorm ondergaan, moet kandidate nie toegelaat word om brille, kontaklense of glase van watter aard ook al of 'n ander sienhulpmiddel te gebruik nie. Kandidate het die keuse om een van die twee oë afsonderlik of albei oë saam te gebruik.

LETTERTOETS.

- Die eerste toets wat die kandidaat moet ondergaan, is die lettertoets wat volgens die Snellen-beginsel deur middel van velle letters afgeneem word. Elke vel bevat sewe reëls, waarvan die vyfde, die sesde en die sewende reël onderskeidelik aan standaarde 5/10, 5/7.5 en 5/5 voldoen.

4. *Vereiste gesigspeil.*—Elke kandidaat moet vyf uit die ses letters in die sesde reël en vier uit die sewe letters in die sewende reël op 'n afstand van sestig voet van die oog af korrek kan aflees.

5. *Toetsmetode.*—Omdat dit onmoontlik is om egalige daglig te verseker, moet liefs van kunstig gebruik gemaak word. Waar geskikte donkerkamers beskikbaar is, moet die toetsvelle vyf of ses voet bokant die vloer aan 'n muur opgehang en twee elektriese gloeilampies van 40 watt elk horisontaal aangebring en op geskikte wyse afgeskerm word sodat die lig regstreeks op twee reëls letters op die vel val. Ekwivalente fluoreseerligte kan gebruik word.

Die toetskamer moet redelik verlig wees en sorg moet gedra word dat daar geen skerp ligte of blink voorwerpe in die kandidaat se gesigsveld is nie. Uiterste kontraste tussen die verligte toetskaart en die agtergrond moet vermy word. Indien 'n geskikte donkerkamer nie beskikbaar is nie, moet die toetsvelle in goeie lig, maar nie in regstreekse sonlig nie, op die vereiste hoogte teen 'n muur opgehang word. Wanneer die kandidaat die regte posisie ingeneem het, moet een van die velle ontbloot en die kandidaat versoek word om bo te begin en dan die letters daarop van links na regs ondertoe af te lees.

Indien aan die einde van die toets gevind word dat die kandidaat die vereiste standaard behaal het, word hy geag te geslaag het en kan hy tot die lanterntoets oorgaan tensy hy die houer is van 'n sertifikaat van bekwaamheid as gesagvoerder, navigasie-offisier, skipper, stuurman of bootman, in welke geval die lanterntoets nie afgelê hoef te word nie.

6. Druiping.—

- (a) Indien 'n kandidaat nie die vereiste standaard op die eerste vel behaal nie, moet hy met minstens vier velle getoets en die volgende alternatiewe aan hom verduidelik word:—
 - (i) Hy kan die eksamen staak en hom na minstens drie maande vir hereksamen aanmeld, in welke geval 'n druiptersifikaat aan hom uitgereik moet word; of
 - (ii) hy kan tot die lanterntoets oorgaan.
- (b) Wanneer 'n kandidaat nie die lettertoets deurmaak nie, moet hy aangeraai word om 'n oogarts te raadpleeg ten einde vas te stel wat die aard van sy gesigsgebrek is en of dit genees kan word.

LANTERNTOETS.

7. *Apparaat.*—'n Spesiale lantern en 'n spieël word vir hierdie toets verskaf. Die toets moet uitgevoer word in 'n kamer wat so donker is dat daar geen lig inkom nie. Die lantern moet reg voor die spieël geplaas word sodat die voorkant van die lantern presies tien voet van die spieël af is, en sy posisie moet sodanig wees dat die ligte wat deur die spieël weerkaats word, duidelik deur die kandidaat aan die linkerkant van die lantern gesien kan word.

8. *Aanpassing by donkerte.*—As die kandidaat aan die begin van die lanterntoets 'n fout begaan, moet hy minstens 'n kwartier lank in 'n volkome of half donker kamer gehou word en dan weer met die toets begin.

9. *Toetsmetode.*—Die lantern wat vir die toets verskaf word, is so gemaak dat een groot lig of twee klein liggies op 'n keer gesien kan word, en is toegerus met twaalf ruite van drie kleure, naamlik rooi, wit en groen. Aan die begin van die toets moet die kandidaat 'n reeks ligte deur die groot opening gewys word en moet hy versoek word om die kleure te noem soos hulle verskyn. Wanneer die wit lig vertoon word, moet beklemtoon word dat hierdie lig nie suiwer wit is nie. As 'n kandidaat die fout begaan om hierdie lig „rooi” te noem, moet 'n regte rooi lig onmiddellik daarna vertoon en sy aandag op die verskil tussen die twee gevestig word.

Nadat 'n reeks ligte deur die groot opening vertoon is, moet twee volledige kringlope en een gebroke kringloop met die twee klein openinkies uitgevoer word terwyl die kandidaat die kleure van elke stel van twee ligte van links na regs opnoem.

10. *Slaging of druiping.*

- (a) Indien 'n kandidaat geen fout in die lanterntoets begaan nadat hy die lettertoets deurmaak het nie, word hy geag die hele eksamen deur te gekom het en moet die eksaminator 'n sertifikaat te dien effekte uitreik.
- (b) As 'n kandidaat of met die groot opening of met die twee kleiner openinkies van die lantern rooi vir groen of groen vir rooi aansien, word hy geag in die lanterntoets te gedruip het.
- (c) As 'n kandidaat 'n ander fout met die lantern begaan, d.w.s. indien hy wit „rooi” of rooi „wit” noem of groen en wit verwar, kan sy geval na die Sekretaris verwys word.
- (d) 'n Kandidaat moet deur die eksaminator in kennis gestel word of hy geslaag of gedruip het of dat sy geval na die Sekretaris verwys is, en in laasgenoemde geval moet hy meegedeel word dat die beslissing of hy geslaag of gedruip het of 'n verdere toets moet ondergaan, te bekwaam tyd aan hom meegedeel sal word. Hangende die ontvangs van die Sekretaris se opdrag met betrekking tot 'n geval wat na hom verwys is, mag 'n kandidaat vir 'n bekwaamheidsertifikaat alleen toegelaat word om met sodanige eksamen voort te gaan met die uitdruklike verstandhouding dat laasgenoemde eksamen gekanselleer sal word indien hy in die gesigstoets vir kleur en vorm gedruip het.

11. *Gevalle verwys na Sekretaris.*—Wanneer 'n geval na die Sekretaris verwys is, moet laasgenoemde beslis of die kandidaat geslaag of gedruip het of 'n verdere toets moet ondergaan. As die Sekretaris beslis dat die kandidaat 'n verdere toets moet ondergaan, moet die kandidaat van die datum, tyd en plek vir die verdere toets in kennis gestel word. Geen addisionele geld word vir sodanige toets gevorder nie. Elke sodanige toets moet afgeneem word deur 'n ander eksaminator as die een wat die eerste toets afgeneem het. Die eksaminator moet beslis of die kandidaat in die toets geslaag of gedruip het.

APPELLE.

12. Wanneer—

- (a) die kandidaat in die eerste lanterntoets gedruip het; of
- (b) die Sekretaris in 'n geval wat na hom verwys is, beslis het dat die kandidaat in die eerste lanterntoets gedruip het; of
- (c) die kandidaat wie se geval na die Sekretaris verwys is, gedruip het in die verdere lanterntoets watter die Sekretaris besluit het,

kan die kandidaat skriftelik na die Sekretaris appelleer en daarna moet hy teen betaling van 'n bedrag van R4.20, wat aan hom terugbetaal moet word indien hy slaag, toegelaat word om 'n verdere spesiale toets te ondergaan.

Die verdere spesiale toets moet waar moontlik afgeneem word deur 'n ander eksaminator as 'n eksaminator wat een van die vroeëre toetse afgeneem het, en sodanige eksaminator kan van advens bedien word deur 'n oogarts wat deur die Sekretaris aangewys is. Die kandidaat kan versoek dat die toets op sy onkoste deur 'n familiebetrekking of vriend of 'n oogarts wat deur hom aangewys is, as getuie bygewoon word.

LEERPLANNE VIR EKSAMENS.

(Sien regulasie 72.)

I. NAVIGASIE-OFFISIER VAN 'N KUSVAARDER VAN 100 OF MEER BRUTO REGISTRATON.

(1) VRAESTEL 1. (Skriftelik.)

PRAKTIESE NAVIGASIE.

(3 uur.)

- (a) Om die juiste peiling van die son en die deviasie van die kompas vir die boegrigting te vind.
- (b) Om die breedtegraad deur middel van die meridiaanshoogte van die son te vind.
- (c) Om deur middel van 'n waarneming van die son naby die meridiaan die standlyn en die breedtegraad waardeur dit in ooreenstemming met 'n verstrekte lengtegraad loop, te bepaal.
- (d) Om die standlyn en 'n punt waardeur dit loop, op grond van 'n waarneming van die son buite die meridiaan te bepaal.

(2) VRAESTEL 2. (Skriftelik.)

KAARTWERK EN LOODSKUNS.

(2 uur.)

(a) Waar die variasie en 'n deviasietafel verstrekk word, om koerse te herlei tot magnetiese en kompaskoerse en omgekeerd. Om die kompaskoers en afstand tussen twee posisies te vind. Die uitwerking van stroom op snelheid. Speling toegelaat vir drif. Om die kompaskoers te vind wat met inagneming van 'n stroom gestuur moet word. Om, waar die kompaskoers wat gestuur word, die snelheid van die skip en die rigting en snelheid van die stroom bekend is, die behou ware koerse te vind.

(b) Om die skip se posisie op 'n kaart deur gelyktydige kruispeilings, ligging en afstand of deur radiokruispeilings en die aanbring van die nodige korreksies te bepaal. Om die skip se posisie deur peilings van een of meer voorwerpe met die meetvaart tussen hulle en met inagneming van 'n stroom te bepaal en om te vind hoe ver die skip by 'n gegewe punt sal verbyvaar. Die konstruksie van 'n reeks lodings. Die aanwending van 'n enkele standlyn wanneer die kus genader word.

AANHANGSEL 3.

- (c) Die gebruik van vermymmerke en horisontale en vertikale gevaarhoeke.
 (d) Om die tyd en hoogte van hoog- en laagwater by 'n standaardhawe te vind (getyafels van die Britse Admiraliteit). Die gebruik van tafels of 'n diagram om die hoogte van die gety op 'n gegewe tydstop te bepaal en op grondslag daarvan die benaderde korreksie van lodings of van die seekaarhoogtes van kusvoorwerpe.
 (e) Kandidate sal mondeling geëksamineer word oor die inligting op 'n kaart of plan, vernameelk oor boeie, ligte, dieptes en gesteldheid van die seabodem, kontoerlyne, getye en getystrome. Herkenning van die kus. Die intelligente gebruik van vaarvoorskrifte. Kaart-korreksie.

(3) VRAESTEL 3. (Skryftelik.)

ELEMENTÊRE SKEEPSKENNIS.

(2 uur).

- (a) Elementêre idees oor skeepsbou. Van die kandidaat sal verwag word om sy praktiese vertrouwdheid te toon met spantwerk, huidbeplating, dekke, waterdigte skotte, peilkoekers en lugpype.
 (b) Die betekenis van die uitdrukkings „verplasing” en „ladingsgewig”. Gebruik van verplasing- en ton-per-duim-skale om gewigte van vrag, ens., volgens diepgang te bepaal. Uitwerking van digtheid van water op diepgang. Toelating vir varswater.
 (c) 'n Algemene begrip van swaartepunt en drukkingspunt en die uitwerking van die byvoeging of verwydering van gewigte. Die gevaar van gedeeltelik gevulde balastens.
 (d) 'n Kennis van die regulasies ingevolge artikel 356 (1) (xxxii) van Wet 57 van 1951.

(4) VRAESTEL 4. (Skryftelik.)

OPSTEL IN EEN VAN DIE AMPTELIKE TALE.

(1½ uur).

Hierdie vraestel sal daarop gemik wees om die kandidaat se vermoë te toets om een van die amptelike tale van die Republiek duidelik, grammatikaal korrek en met die nodige aandag aan spelling, leesbaarheid en netheid te skryf. Dit sal geensins 'n toets van tegniese kennis uitmaak nie.

(5) MONDELINGE EKSAMEN.

- (a) Volledige kennis van die inhoud en toepassing van die regulasies betreffende die voorkoming van botsings ter see. (Kandidate sal nie in die posisie gestel word om 'n seilskip te hanteer nie, maar van hulle sal verwag word om 'n seilskip se ligte uit te ken en om kennis te dra van so 'n skip se moontlike maneuvres na gelang van die rigting van die wind.)
 (b) Nood- en loodsseine; strawwe vir misbruik.
 (c) Wrakmerkstelsel.
 (d) Die gebruik van die vuurpylapparaat.
 (e) Kennis van die inhoud van die handelskeepvaartkennisgewings gepubliseer deur die Departement van Vervoer, en die gebruik van die Britse Admiraliteit se kennisgewings aan seeliede en Suid-Afrikaanse kennisgewings aan seeliede.
- (a) Merk van gewone loodlyn en uitgooi van dielood.
 (b) Die gebruik en onderhoud van dieptepeilingstoestelle en die gebruik en byhou van logboeke.
 (c) Gebruik en versorging van masjienkamertelegrawe.
 (d) Voor anker kom, die gebruik van twee ankers. Vasmeer aan boeie. Aanlê langs en verlating van 'n kaai. Binnevaar en verlating van 'n dok.
 (e) Hou van ankerwag. Sloop van anker.
 (f) Versorging, onderhoud en gebruik van reddingstoestelle en brandblustoestelle op 'n kusvaarder.
 (g) Hantering van bote wat geroei word of onder seil vaar en in onstuimige weer. Op die strand laat loop of land. Langsaan kom.
- Die sterkte van tou, met inbegrip van draadkabels. Kragwins met behulp van takels.
- Elementêre kennis van vragwerk, soos verstrekk in die leerplan vir Hoofnavigasie-offisier [vraestel 5, afdeling (g)].
- (a) Aflees en begrip van 'n barometer, termometer en hidrometer.
 (b) Gebruik van 'n sekstant vir die meting van vertikale en horisontale hoeke, en bepaling van die indeksfout.

(6) SEINE.

Moet seine stuur en ontvang in—

- (a) semafoor tot agt woorde per minuut;
 (b) Morse-kode met flitslamp tot ses woorde per minuut;
 (c) Internasionale Seinboek.

II. GESAGVOERDER VAN 'N KUSVAARDER VAN 100 OF MEER BRUTO REGISTERTON.

(1) VRAESTEL 1. (Skryftelik.)

KAARTWERK EN LOODSKUNS.

(2 uur).

Behalwe oor die leerplan vir Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton kan in die skryftelike of mondelinge dele van hierdie vraestel ook oor die volgende aangeleenthede vrae gestel word:—

- (a) Afstand van ligte wat gesien kan word. Afstand vanaf 'n landpunt van bekende hoogte.
 (b) Die gebruik van peilings wat deur die skip se radiorigtingsoeker verkry is. Die gebruik van radiobakens.
 (c) Kandidate sal mondeling geëksamineer word oor die uitkies van geskikte punte vir peilings, nadering van 'n ankerplek en die binnevaar van smal waters. Die betroubaarheid van kaarte.

(2) VRAESTEL 2. (Skryftelik.)

PRAKTIESE NAVIGASIE.

(2 uur).

Hierdie vraestel kan vrae insluit wat gedek word deur die leerplan vir Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton:—

- (a) Bepaling van die juiste peiling van enige hemel-liggaam en die deviasie vir die boegrigting.
 (b) Bepaling van die benaderde tyd (tot 'n minuut noukeurig) van die meridiaandeurgang van 'n ster. Bepaling van die breedtegraad volgens die meridiaanshoogte van 'n ster.
 (c) Om aan die hand van waarneming van 'n ster naby die meridiaan die standlyn en die breedtegraad te bepaal waardeur dit in ooreenstemming met 'n gegewe lengtegraad gaan.
 (d) Om aan die hand van waarneming van 'n ster buite die meridiaan die standlyn in 'n posisie waardeur dit gaan, te bepaal.
 (e) Herkenning van sterre van die grootste helderheid deur verwysing na die vernaamste sterrebeelde.

(3) VRAESTEL 3. (Skriftelik).

STABILITEIT EN SEEWAARDIGHEID.

(2 uur).

- (a) Die betekenis van metasenter, metasenterhoogte, aanvangstabiliteit, oprighefboom flottasiepunt, trimveranderingsmoment.
- (b) Bepaling van die swaartepunt van 'n skip in 'n nuwe toestand as die swaartepunt in die ou toestand verstrekk word. Hoe die byvoeging, verwydering of verskuiwing van gewigte die posisie van die swaartepunt beïnvloed. Stywe en rank skepe. Uitwerking van verskuiwing van vrag of soliede ballas. Vragte wat maklik verskuif en voorsorgmaatreëls wat getref moet word. Dekvragte. Inlaai van ballas. Die gevaar van „vry oppervlak” van vloeistowwe (sonder bewys of berekenings).
- (c) Die gebruik van stabiliteitskrommes en die gegewens verstrekk aan 'n skip.
- (d) Eenvoudige trimprobleme.
- (e) Beskadiging waardeur seewaardigheid geraak word. Tydelike herstelwerk ter see of in 'n hawe. Seewaardigheidsertifikaat.

(4) VRAESTEL 4. (Skriftelik).

KOMPASDEVIASIE.

(1½ uur).

- (a) Eenvoudige kennis van die betekenis van harde en sagte yster. Eenvoudige idees oor die uitwerking van harde yster; vertikale sagte yster en horisontale sagte yster op die deviasies van die kompas. Die middele wat aangewend word om vir hierdie uitwerkings te kompenseer, veral in die geval van kusvaarders.
- (b) Versorging en onderhoud van magnetiese kompas. Plasing van kompas, veral met betrekking tot die nabyheid van magnetiese materiaal en elektriese toerusting.
- (c) Om die magnetiese peiling van 'n afgeleë voorwerp te bepaal aan die hand van kompaspeilings op punte wat ewe ver daarvandaan geleë is, en om 'n deviasietabel op te stel.

(5) VRAESTEL 5. (Skriftelik).

VRAGWERK.

(2 uur).

- (a) Kennis van die bepaling van die kraghebbende regulasies betreffende laai- en aflaiwerk en kolelaaitoestelle.
- (b) Eenvoudige berekenings van spannings in hangers, laaibome, dirke, ens. Sterkte van toue, draadkabels en kettings. Takels en kragwinds.
- (c) Gebruik en onderhoud van vraguitrusting en die organisasie van vragwerk.
- (d) Die beginsels betrokke by die stuwling en hantering van vrag, met inbegrip van onverpakte vrag.

(6) MONDELING.

1. Regulasies vir die voorkoming van botsings ter see, ens., soos uiteengesit in paragraaf 1 (a) van die leerplan vir die mondelinge eksamen van Navigasie-offisier van 'n kusvaarder van 100 of meer bruto registerton.
2. (a) Hantering van 'n skip in slegte weer en van 'n ontredderde skip.
- (b) Behoud van bemanning en passasiers wanneer skip vergaan. Verlating van 'n vergane skip. Vuurpyle en vuurpylapparaat. Verbindings met die strand.
- (c) Verlening van hulp aan 'n vaartuig in nood. Redding van die bemanning van 'n ontredderde skip.
- (d) Uitwerking van skroewe op die stuur van 'n skip. Maneuvreer van skip in riviere en hawens.
3. (a) Algemene kennis van die vereistes van Wet 57/1951 en regulasies betreffende strandings, botsings of ander ongevallen, verslae wat in die geval van dood of besering opgestel moet word, lewering van bemanningslys, ooreenkomste en ontslagsertifikate.
- (b) 'n Gesagvoerder se kennis van die wet betreffende laslynmerke, en inskrywings en verslae wat in verband met hulle gedoen moet word.
- (c) In- en uitklaring van 'n kusvaarder.
4. Voldoende weerkunde om die betekenis van weerberigte vir skeepvaart (kusgebiede) te snap. Visuele en uitgesaaide stormwaarskuwings.
5. Die gebruik van RADAR as navigasihulpmiddel.

(7) VRAESTEL 7.

SEINE.

1. Uitstuur en ontvang van seine in—
- (a) semafoor tot ag woorde per minuut;
- (b) Morse-kode met flitslamp tot ses woorde per minuut;
- (c) Internasionale Seinboek.
2. Die praktiese gebruik van skeepsradiorigtingsoeker.

III. TWEDE NAVIGASIE-OFFISIER VAN 'N SKIP OP VREEMDE VAART.

Kandidate moet hul begrip van hul werk deur middel van redelik noukeurige sketse toon. Waar paslik, moet antwoorde op probleme oor praktiese navigasie vergesel gaan van 'n skets wat min of meer volgens skaal geteken is.

In die vraestel oor praktiese navigasie kan die totale korreksie van hoogtes met behulp van tafels geskied. In die vraestel oor „Beginnels van navigasie” moet elke korreksie afsonderlik getoon word.

Die vraestelle oor „Beginnels van navigasie” en „Wiskunde” is bedoel om die kandidaat se begrip te toets van fundamentele tegniese idees en prosesse wat in sy werk ter see nodig is. Wiskundige bewyse van formules word nie vereis nie.

(1) VRAESTEL 1. (Skriftelik).

ALGEMENE SKEEPSKENNIS.

(3 uur).

- (a) Die name van die vernaamste dele van 'n skip. Algemene idees oor skeepsbou. Die kandidaat sal sy praktiese vertrouetheid moet toon met langs- en dwarspante, balke en balkknieë, waterdigte skotte, luikgate, roere en sturgerei, huidbeplating, dubbele bome en kimme, skroefraam, skroef en skroefas, skroefaskoker, peilkokers, lugtype en algemene pompinrigting. Verstewiging en versterking om hyging en stamp te weerstaan. Die oorsaak en voorkoming van korrosie in 'n skip se bouwerk.
- (b) Die betekenis van die uitdrukkings „blokkoeffisiënt”, „verplasing” en „ladingsgewig”. Gebruik van verplasing- en ton-perduim-skale om gewigte van vragte, ens., volgens diepgang te bepaal. Uitwerking van digtheid van water op diepgang. Korreksie vir varswater. Die wette betreffende drywende liggame. Die betekenis van die uitdrukkings „dryfvermoë” en „reserwedryfvermoë”. Algemene begrip van swaartepunt en drukkingspunt, en die uitwerking van die byvoeging of verwydering van gewigte. Metasenterhoogte. Die gevaar van gedeeltelike ballas.
- (c) Optuiging van 'n skip vir die laai en aflai van vrag, en die gebruik van laaibome en windasse. Die stuwling en garnering van vragte, met inbegrip van onverpakte vrag. Beskerming teen beskadiging as gevolg van sweling. Vragte onverpakte olie. Berekening van ruimte deur deelvrag in beslag geneem en van oorblywende ruimte. Herleiding van gewigsmaat van vrag tot ruimtemaat en omgekeerd. Elementêre idees oor die opstel en gebruik van vragplanne. Ventilasiestelsels van ruime en tenks.
- (d) Die name en funksies van verskillende dele van die reddingsboot van 'n skip. Die tipes konstruksie. Kapasiteit, dryfvermoë en getal persone. Versorging en onderhoud van reddingsbootuitrusting, reddingsboei, reddingsbuis, lynwerptoestelle, ligte en geluidseine.

(2) VRAESTEL 2. (Skriftelik).

KAARTWERK EN LOODSKUNS.

(2 uur).

(a) Waar die variasie en 'n deviasietafel verstrek word, om ware koerse te herlei tot magnetiese en kompaskoerse en omgekeerd. Om die kompaskoers en afstand tussen twee posisies te vind. Die uitwerking van stroom op snelheid. Speling toegelaat vir drif. Om, waar die kompaskoers wat gestuur word, die snelheid van die skip en die rigting en snelheid van die stroom bekend is, die behoue ware koers te vind. Om die koers te vind wat met inagneming van 'n stroom gestuur moet word.

(b) Om die skip se posisie op 'n kaart deur gelyktydige kruispeilings, ligging en afstand, of deur radiokruispeilings en die aanbring van die nodige korreksies te bepaal. Om die skip se posisie deur peilings van een of meer voorwerpe met die meetvaart tussen hulle en met inagneming van 'n stroom te bepaal en om te vind hoe ver die skip by 'n gegewe punt sal verbyvaar. Bepaling van die skip se posisie deur horisontale sekstanthoeke.

(c) Die gebruik van vermymerke en horisontale en vertikale gevaarhoeke.

(d) Om die tyd en hoogte van hoog- en laagwater by 'n standaardhawe te vind (getyafels van die Britse Admiraliteit). Die gebruik van tafels of 'n diagram om die hoogte van die gety op 'n gegewe tydstop te bepaal en op grondslag daarvan die benaderde korreksie van lading of van die seekaarthoogtes van kusvoorwerpe.

(e) Kandidate sal mondeling geëksamineer word oor die inligting op 'n kaart of plan, vernameelk oor boeie, ligte, dieptes en gesteldheid van die seabodem, kontoerlyne, getye en getystrome. Herkenning van die kus. Die intelligente gebruik van vaarvoorskrifte. Kaart-korreksie.

(3) VRAESTEL 3. (Skriftelik).

PRAKTIESE NAVIGASIE.

(3 uur).

(a) Praktiese probleme oor kladkaart-, parallel- en Mercatornavigasie.

(b) Die gebruik van die koppelkoerstafels om die skip se posisie op 'n gegewe tydstop te bepaal as kompaskoerse en -foute en die meetvaart, soos deur die log aangegee of volgens tyd en geskatte snelheid bereken, verstrek en met die moontlike uitwerking van wind en stroom rekening gehou word.

(c) Om die breedtegraad deur middel van die meridiaanshoogte van die son of 'n ster te vind. Breedtegraad volgens waarneming van die Poolster.

(d) Om deur middel van waarneming van die son of 'n ster naby die meridiaan die standlyn en die breedtegraad waardeur dit loop, in ooreenstemming met 'n verstrekte lengtegraad te bepaal.

(e) Om die standlyn en 'n punt waardeur dit loop, op grond van 'n waarneming van die son of 'n ster buite die meridiaan te bepaal.

(f) Om die skip se posisie ten tyde van die tweede waarneming met behulp van standlyne verkry op grond van twee verskillende waarnemings en, aan die hand daarvan, die verlangde middagposisie te bepaal.

(g) Bepaling van die ware peiling van 'n hemelliggaam en die deviasie van die kompas vir die boegrigting.

(4) VRAESTEL 4. (Skriftelik).

WISKUNDE.

(2 uur).

(a) *Algebra*.—Optel, aftrek, vermenigvuldiging, deling, eksponentwet, invoeging en verwydering van hakies. Eenvoudige vergelykings—probleme. Ontwikkeling van formules, transposisie en evaluering. Gelyktydige formules van die eerste orde met twee onbekendes—probleme, eenvoudige faktore, breuke. Die oplossing van die vierkantsvergelyking. Grafieke. Asse. Koördinate. Tekenning en vertolking van grafiese diagramme, bv. weerstatistieke en verplasingsskrommes. Probleme oor grafieke. Die begrippe verhouding, eweredigheid en variasie en die toepassing daarvan op eenvoudige probleme.

(b) *Gewone logaritmes*.—Die praktiese aanwending van logaritmes tot die grondtal 10; hul aanwending in eenvoudige berekenings waarby vermenigvuldiging, deling, enkelvoudige magte en wortels betrokke is.

(c) *Oppervlakte- en volumeberekening*.—Die oppervlakte en omtrek van 'n reghoek, driehoek en sirkel. Die volumes en vlaktemate van kasvormige voorwerpe, silinders, wie en bolle. Praktiese toepassings, bv. gewig van algemene vraag van verskillende vorms; volumes van van ruime, bunkers en tenks; gewig van inhoud.

(d) *Praktiese Meetkunde*.—Die teken van plat driehoeke. Kongruensie van driehoeke. Die reghoekige driehoek. Buitehoek gelyk aan aan die som van die teenoorstaande binnehoeke. Som van hoeke in 'n driehoek. Gelykvormige driehoeke en verhouding van ooreenstemmende sye. Ewewydige lyne en dwarslyn. Eienskappe van sirkels, koorde en tangense. Hoek in 'n halfsirkel; hoeke onderspan deur 'n koord van 'n sirkel. Kragte, resulterende kragte en hul komponente. Die vektordiagram.

(e) *Driehoeksmeting*.—Meting van hoeke. Boogmaat. Trigonometriese verhoudings tot een volledige omwenteling. Halfversinus. Eenvoudige verband tussen verhoudings. Komplementêre en supplementêre hoeke en hul verhoudings. Eenvoudige identiteite. Oplossing van reghoekige en skeefhoekige driehoeke, met inbegrip van praktiese probleme wat daarop gebaseer is. Die gebruik van die koppelkoerstafels vir die oplossing van reghoekige driehoeke. Elementêre eienskappe van boldriehoeke. Oplossing van boldriehoeke (as drie sye of twee sye en die ingeslote hoek gegee word). Oplossing van reghoekige en regsydige boldriehoeke.

(5) VRAESTEL 5. (Skriftelik).

BEGINSELS VAN NAVIGASIE.

(2 uur).

In hierdie vraestel kan kandidaat versoek word om 'n figuur redelik volgens skaal te teken en te meld watter projeksie gebruik is. Van kandidaat sal verwag word om 'n algemene begrip van die volgende te hê:—

(a) Die vorm van die aarde. Pole. Ewenaar. Meridiane. Breedtesirkels. Die ligging van 'n plek volgens sy breedte- en lengtegraad bepaal. Rigting, peiling, afstand, maateenhede. Breedteverskil, lengteverskil, afvaart, middelbreedte en meridiaanbreedteverskil en die verband tussen hulle. Groot- en kleinsirkels op 'n bol. Kortste afstand tussen twee punte op die oppervlakte van 'n bol.

(b) Die hemelruim, hemelpole, hemelmeridiaan bo en onder pole, hemeleewenaar, hemelhorison, toppunt, primêre vertikale sirkel, hoogtesirkels.

(c) Sonnestelsel. Die beweging van die aarde en ander hemelliggame. Middelbare son. Ekliptika. Eerste punt van die Ram. Deklinasie. Sterre-uurhoek. Asimut. Opkoms en ondergaan van hemelliggame. Lengte van dag en nag. Skemering. Die posisie van 'n hemelliggaam op die hemelbol beide in en buite verhouding tot die waarnemer, d.w.s. asimut met hoogte of deklinasie met sterre-uurhoek of plaaslike uurhoek. Herkenning van sterre van die grootste helderheid deur verwysing na die hoofsterrebeelde.

(d) Tyd. Greenwich- en ander standaardtye. Middelbare tyd. Skynbare tyd. Sterretyd. Tydsverwening. Verband tussen lengtegraad en tyd.

(e) Uurhoek van 'n hemelliggaam in tyd en in 'n boog. Greenwich-uurhoek van son, maan, planete en die Ram. Sterre-uurhoek van 'n ster.

(f) Korreksie van sekstanthoogtes. Duiking, straalbreking, horisontale parallaks, hoogteparallaks, halwe middellyn en vergroting.

(g) Geografiese posisie van 'n hemelliggaam. 'n Hoogtesirkel op die aarde en die praktiese aanwending daarvan, d.w.s. standlyn. Hoogteverskil.

(h) Magnetiese meridiaan. Variasie en deviasie.

(i) Die eenvoudige eienskappe van 'n Mercatorkaart. Lengte- en breedteskale. Die meting van afstand. Loksodrome. Meridiaanstukke.

(j) Chronometers. Hantering en versorging, opwen, aanslag en vergelyking.

(6) VRAESTEL 6. (Skriftelik).

TAAL.

(1½ uur).

Die vraestel sal daarop gemik wees om die kandidaat se vermoë te toets om een van die amptelike tale van die Republiek duidelik en grammatikaal korrek te skryf, en spelling, leesbaarheid en netheid sal in aanmerking geneem word. Dit sal geensins 'n toets van tegniese kennis uitmaak nie. Hierdie vraestel kan bestaan uit 'n opstel, 'n opsomming of 'n brief.

MONDELING EN PRAKTIËS.

1. (a) Optuiging van skepe. Sterkte van toue, met inbegrip van draadkabels. Montering van verskillende soorte hefinrigtings en kennis van die krag verkry uit takels. Knoop en splits, met streng inagneming van die huidige praktyk. Bindels, kruisbindels, kettingstoppers, ens.
 - (b) Op- en neerhaling van topmaste.
 - (c) Die aanslaan, span en mindering van reddingsbootseile. Hantering van bote wat geroei word of onder seil vaar en in onstuimige weer. Op strand laat loop of land. Langsaan kom.
 - (d) Roerbevele. Stuurbevele aan stuurman. Uitwerking van skroewe op die stuur van 'n skip. Stop, tru en maneuvreer. Kort draai met 'n stoomskip. Noodmanoeuvres. Man oorboord.
 2. (a) Merk en gebruik van gewone loodlyn.
 - (b) Gebruik en onderhoud van meganiese logge en dieptepeilingsinrigtings.
 - (c) Gebruik en onderhoud van masjienkamer- en ander telegrawe.
 - (d) Vuurpyl- en lynwerpapparaat.
 3. (a) Ankers en kabels en hul gebruik en stuwng. Hoe om 'n skip in 'n noodgeval voor 'n enkele anker te bring.
 - (b) Kennis van gebruik en onderhoud van dekinrigtings en stuurgerei.
 - (c) Die gebruik van reddingsinrigtings.
 - (d) Die gebruik van brandblustoestelle, met inbegrip van die rookhelm.
 4. (a) Voorbereidsels vir vertrek. Pligte voordat uitgevaar, 'n hawe binnegevaar en 'n dok binnegegaan word. Aanlê en vasmaak aan 'n boei, veral met betrekking tot die agterten van 'n skip.
 - (b) Hou van ankerwag. Sleep van anker.
 - (c) Pligte van offisier van die wag. Gebruik van kompas om gevaar van botsing te bepaal.
 5. (a) Volledige kennis van die inhoud en toepassing van die regulasies vir die voorkoming van botsings ter see. (Kandidate sal nie in die posisie geplaas word waar hulle 'n seilskip moet hanteer nie, maar van hulle sal verwag word om 'n seilskip se ligte te herken en kennis te dra van so 'n skip se moontlike maneuvres na gelang van die windrigting.)
 - (b) Nood- en loodsseine; strawwe vir misbruik.
 - (c) Stelsel vir die merk van wrakke.
 - (d) Kennis van die inhoud van handelskeepvaartkennisgewings gepubliseer deur die Departement van Vervoer, en die gebruik van die Britse Admiraliteit se "Notices to Mariners" en Suid-Afrikaanse "Kennisgewings aan Seeliede".
 6. (a) Aflesing en begrip van 'n barometer, termometer, hidrometer en higrometer. (Die instrumente verskaf deur die Weerkantoor sal as standaardinstrumente beskou word.)
 - (b) Gebruik van 'n asimutspieël, polorus (peilskyf) of ander instrument vir peilwerk.
 - (c) Gebruik van 'n sekstant vir meting van vertikale en horisontale hoeke; aflesing van 'n sekstant beide op en buite die boog.
 - (d) Korreksie van 'n sekstant waarin een of meer regstandigheid-, sy- of indeksfoutte aangebring is.
 - (e) Bepaling van indeksfout van 'n sekstant.
 - (f) Kontrolering van chronometers volgens sein per gonser of volgens 'n ander metode; vergelyking van twee chronometers.
 7. As hy dit op grond van swakheid geopenbaar deur die kandidaat nodig ag, kan die eksaminator aan die kandidaat vrae stel wat uit die skriftelike werk voortspruit.
- Seine.—Die uitstuur en ontvang van seine in—
- (a) semafoor tot agt woorde per minuut;
 - (b) Morse-kode met flitslamp tot ses woorde per minuut;
 - (c) Internasionale Seinboek.

IV. HOOFNAGASIE-OFFISIER VAN 'N SKIP OP VREEMDE VAART.

(1) VRAESTEL 1. (Skriftelik).

PRAKTIËSE NAGASIE.

(3 uur.)

Hierdie vraestel kan vrae oor die leerplan vir Tweede Navigasie-offisier insluit. Die uitdrukking „hemelliggaam” sluit die maan en planete in:—

- (a) Berekening van die benaderde tyd (tot 'n minuut noukeurig) wanneer 'n hemelliggaam oor die meridiaan sal gaan; berekening van 'n benaderde hoogte vir die stel van die sekstant om die meridiaanhoogte van 'n hemelliggaam te vind. Bepaling van die breedtegraad volgens die meridiaanhoogte van 'n hemelliggaam.
- (b) Om die rigting van die standlyn en 'n punt waardeur dit loop, op grond van 'n waarneming van 'n hemelliggaam naby of buite die meridiaan te bepaal.
- (c) Bepaling van die skip se posisie deur die paring van enige twee waarnemings met of sonder meetvaart.
- (d) Berekening van die aanvangskoers en die afstand op 'n grootsirkel- of samegestelde grootsirkelgrondkoers tussen twee posisies en bepaling van een of meer posisies op die baan.

(2) VRAESTEL 2. (Skriftelik).

KAARTWERK EN LOODSKUNS.

(2 uur.)

Benewens vrae oor die leerplan vir Tweede Navigasie-offisier kan ook in die skriftelike of in die mondelinge dele van hierdie vraestel vrae oor die volgende gestel word:—

- (a) Afstand van ligte wat gesien word, afstand van landpunt van bekende hoogte.
- (b) Samestelling en gebruik van 'n reeks dieptepeilings. Die gebruik van 'n enkele standlyn wanneer die kus genader word. Die gebruik van radiobakens.
- (c) Bepaling van die tye en hoogtes van hoog- en laagwater by 'n sekondêre hawe (Admiraliteitsgetyafels).
- (d) Kandidate sal mondeling oor die betroubaarheid van kaarte geëksamineer word. Uitkieping van geskikte punte vir peilings. Nadering van 'n ankerplek en die binnevaar van smal waters. Landkenning in dik en helder weer.
- (e) Die kandidaat kan mondeling of prakties geëksamineer word oor die gebruik van 'n gnomoniese kaart en die oorbring van 'n grootsirkel- of samegestelde grondkoers vanaf so 'n kaart op 'n Mercatorkaart, en oor die gebruik van kruisnetkaarte.

(3) VRAESTEL 3. (Skriftelik).

SKEEPSBOU EN -STABILITEIT.

(3 uur.)

(a) Algemene kennis van die vernaamste struktuurdele van 'n skip. Die regte name van die verskillende dele. Midskeepse deursnee van eendek-, tussendek- en skuildekskepe en skepe vir die vervoer van onverpakte olie. Funksies, konstruksie en verstewiging van waterdigte skotte, met inbegrip van bôtsingskot. Skroefraam en voorstewe en hoe dit bevestig word. Roere en hoe hulle bevestig word. Bou, verstewiging en sluitinrigtings van luikgate. Kluispype en hoe hulle bevestig word. Klinknaels en klinkwerk. Toetsing van 'n ry klinknaels. Toetsing van tenks en ander waterdigte werk. Tipes sweiswerk, voordele en nadele van elkeen, metodes aangewend om vervorming teë te werk, en gebreke gewoonlik in sweislaste teëkom.

- (b) Spannings en vervormings van skepe in 'n seegang of as gevolg van lading en ballas. Kennis van daardie dele van 'n skip wat spesiaal verstrek word om sulke spannings te weerstaan of waar beskadiging deur oormatige korrosie stellig sal voorkom.
- (c) Die vermoë om in 'n verslag 'n duidelike uiteensetting te gee van beskadiging wat gedurende 'n seereis opgedoen is.
- (d) Dryfvermoë en reserwedryfvermoë. Die oprigkoppel wanneer 'n eksterne krag 'n skip laat oorhel. Dwars- en langsmetasenters. Metasenterhoogte. Aanvangstabiliteit en sy beperking tot klein hellingshoeke. Die berekening van oppervlaktes met behulp van Simpson se Eerste en Tweede Reëls en die Vyf-ag-reël.
- (e) Bepaling van swaartepunt van 'n skip in 'n nuwe toestand as die swaartepunt in die ou toestand verstrek word. Hoe die posisie van die swaartepunt deur die byvoeging, verwydering of verskuiwing van gewig beïnvloed word. Stywe en rank skepe. Verandering van stabiliteit gedurende 'n seereis. Uitwerking van die verskuiwing van vrag of soliede ballas.
- Die gevaar van „vry oppervlakte” by vloeiistowwe (sonder bewyse of berekenings).
- (f) Verandering van trim [M.T.V. 1^o en -F.P. (flottasiepunt) verstrek].
- (g) Gebruik van stabiliteitskrommes en -gegewens wat aan 'n skip verskaf word.

(4) VRAESTEL 4. (Skriftelik).

WEERKUNDE.

(2 uur).

- (a) Die beginsels van die kwik- en aneroidbarometer. Seekwikbarometer. Hoe om barometerstande af te lees en tot standaardstelmerk te herlei. Die gebruik van die Gold-skuif. Barograaf.
- (b) Die beginsels van die termometer en higrometer en hul gebruike ter see.
- (c) Die beginsel en gebruik van 'n hidrometer.
- (d) Kennis van die verspreiding van gemiddelde druk en die heersende winde en stroomstelsels van die aardbol. Verhouding tussen drukverspreiding en wind. Die wet van Buys Ballot.
- (e) Die kenmerke en weer wat gepaard gaan met die vernaamste drukstelsels, bv. antisiklone, laagdrukgebiede. Permanente en halfpermanente antisiklone en laagdrukgebiede en hul uitwerking, bv. passaatwinde, moessonwinde.
- (f) Tropiese draaistorms, waar en in watter seisoene hulle voorkom en waarlangs hulle trek. Reëls vir die vermyding van tropiese storms. Gebruik van barometriesse waarnemings by 'n enkele stasie saam met weertekens.
- (g) Waterdamp in die atmosfeer, verdamping, kondensasie, neerslag, betekenis van versadiging, relatiewe vogtigheid, vorming van wolke, mis en newel.
- (h) Styg- en daalwinde. Land- en seebriese.
- (i) Die Beaufort-windskaal en -weerskrif in gebruik ter see. Metodes om rigting en krag van wind ter see te skat.
- (j) Kennis van die tipes weerberigte wat deur die Internasionale Weerkundige Organisasie aanvaar en vir skeepvaart beskikbaar is. Kodering en dekodering van berigte vervat in dele V en VI van Weerberigte vir die Skeepvaart.

(5) VRAESTEL 5. (Skriftelik).

SKEEPSONDERHOUD, -ROETINE EN -VRAGWERK.

(3 uur).

- (a) Die hou van 'n skeepsoerhaal (dekjoernaal).
- (b) Organisasie van 'n bemanning vir roetine-, onderhouds- en noodwerk.
- (c) Inspeksie en onderhoud van die skip en sy toerusting, bv. skotte, dubbele bome, dieptenks, kimme, pypleidings, buiteboord-roosters, roer, ankers en kables en stuurgerei. Dreinerings van ruime en tenks. Droogdokroetine.
- (d) Eienskappe en gebruike van verwe en beskermende bedekking. Afbik- en skilderwerk. Behandeling van houtwerk. Sementwerk.
- (e) Bestellings en voorrade. Herstellyste.
- (f) Eenvoudige berekenings van spannings in spantoue, laaibome, dirke, ens. Sterkte van toue, draadkables en kettings. Verskillende tipes tou, draadkabel, stroppe en hul gebruike. Takels en kragwins.
- (g) Gebruik en onderhoud van vraggerei en die organisasie van vragwerk. Kennis van die regulasies ingevolge artikel 356 (1) (xxxii) van Wet No. 57 van 1951. Algemene beginsels in verband met die stuwung en hantering van vrag, bv. garnering, ventilasie en slingering. Die vervoer van spesiale vragte, soos verkoelde vrugte, staalspoore, onverpakte vloeistof, dekvrage, dekvrage hout, onverpakte vrag. Die gebruik van gewelingskotte. Skeiding. Voorsorgsmaatreëls wat met soliede ballas getref moet word. Ventilasië vir verskillende tipes vragte. Swetting; die oorsaak en voorkoming daarvan.
- (h) As 'n vraglys verskaf word, die stuwung van die vrag in 'n ruim of ruime deur opstelling van 'n ruwe stuwingsplan waarin rekening gehou word met stabiliteit, gedrag van skip in 'n seegang, beskadiging en besmetting van vrag, en toeganklikheid by opsionele lossingshawens.

(6) VRAESTEL 6. (Skriftelik).

ELEMENTÊRE MAGNETISME, ELEKTRISITEIT EN DIE TOLKOMPAS.

(2 uur).

1. Magnetisme.

- (a) 'n Eenvoudige magneet. Pole van 'n magneet. Die wet van aantrekking en afstoting. Die molekulêre teorie van magnetisme soos op ferromagnetiese materiaal toegepas. Die begrip van magnetiese „hard” en „sagte” yster. Die vorm van die magnetiese veld rondom 'n magneet. Die betekenis van die uitdrukkings „intensiteit van magnetisering”, „magnetiese gevoeligheid” en „permeabiliteit”. (Geen wiskundige formule sal vereis word nie.)
- (b) Die magnetiese veld van die aarde. Die magnetiese pole van die aarde. Magnetiese ewenaar. Die totale magnetiese krag van die aarde. Inklinasiehoek. Horisontale en vertikale komponente. Magnetiese variasie. (Geen wiskundige formule sal vereis word nie.)
- (c) Die uitwerking daarvan om 'n kompasnaald tot die horisontale vlak te beperk. Die uitwerking daarvan om 'n steurende krag naby 'n kompasnaald te bring.
- (d) Die versorging en onderhoud van verskillende tipes skeepskompe.

2. Elektrisiteit.

- (a) 'n Eenvoudige begrip van die elektroneteorie. Stroom, potensiaalverskil, weerstand en hul eenhede. Wet van Ohm. Uitwerking van 'n elektriese stroom:
- (i) Verwarmende uitwerking. Krag. Die elektriese eenheid.
- (ii) Chemiese werking. Eenvoudige selle, primêr en sekondêr.
- (iii) Magnetiese uitwerking. Magnetiese veld voortgebring deur 'n stroom. Magnetiese veld van 'n stroomdraende solenoïed en die uitwerking daarvan wanneer ferromagnetiese materiaal in 'so 'n veld ingebring word. Magnetostriksie.
- (b) Die elektriese motor. Meetinstrumente: draaispoel en draaiyster. Elektromagnetiese induksie. Beweging van 'n geleier in 'n veld. Variasie in grootte van 'n veld. Uitwerking van sluiting en breking van 'n stroom. Induksiespoel. Induktansie-eenheid. Dinamobeginsel—eenvoudige kommutator.
- (c) Elektrostatiese veld. Kapasiteitseenheid. Kondensor of kapasitor.
- (d) Sekerings, skakelaars en eenvoudige elektriese stroombane in skepe. Gebruik van meetinstrumente. Hoe om stroom en spanning te meet.
- (e) Vernaamste simbole wat in diagramme gebruik word.

3. Tolkompas.—'n Eenvoudige nie-wiskundige behandeling van die volgende:—

Die beginsel van die vry-tollende giroskoop. Uitwerking van die draaiing van die aarde. Helling en drif. Presessie. Swaarte-beheer. Demping.

(7) MONDELINGE EKSAMEN.

1. (a) Verskuiwing van groot sparre en oprigting van katrolbokke.
- (b) Die hantering van swaar gewigte, veral met betrekking tot sterkte van gerei wat gebruik word.
- (c) Gebruik en versorging van alle dek- en bedektoestelle en toebehore: wenne, kaapstanders, windasse, noodsturgerei en toebehore gebruik tussen anker en kettingbak. Die ophaal van bote.
2. Ankers: verskillende soorte; voordele en nadele van eik. Kabels en hul versorging. Voorbereidings vir ankering. Ankering met 'n enkele anker en gebruik van tweede anker. Klaring van onklaar anker. Mering. Klaring van onklaar kluis. Ankering in 'n stroomstreek en in 'n beperkte ruimte. Laat slip van 'n kabel. 'n Anker met bote uitdra. Vertrek.
3. (a) Aanlê langs 'n kaai, ens. Maneuvring in riviere en hawens. Die uitwerking van stroom, wind, vlak water en diepgang op maneuvring.
- (b) Hantering van stoomskepe in stormagtige weer. Hoe om 'n ontredderde of onbestuurbare vaartuig uit die seidal te hou en sy lydrif te verminder.
- (c) Die dieplood uitgooi.
4. (a) Algemene kennis van die regulasies betreffende reddingstoestelle.
- (b) Ongelukke, bv. botsing, stranding, ongelukke aan luik, lekkasies, brande en hul behandeling. Handherstelwerk. Hantering van 'n ontredderde skip.
- (c) Praktiese kennis van die afskerming van 'n skip se navigasieligte.
- (d) Voorbereidings vir inbring in droogdok en ontdokking. Gebruik van stutte, kimblokke en kimstutte.
- (e) Kennis van die beperkings (as daar is) op die uitlossing van olie of olierige water in die see.
5. Regulasies vir die voorkoming van botsings ter see, ens., soos uiteengesit in paragraaf 5 (a) van die leerplan vir die mondelinge en praktiese eksamen van Tweede Navigasie-offisier.
6. As hy dit nodig ag op grond van 'n swakheid wat die kandidaat aan die dag lê, kan die eksaminator aan hom vrae stel wat uit die skriftelike werk voortvloei.

(8) SEINE.

1. Die uitstuur en ontvang van seine in—
 - (a) semafoor tot ag woorde per minuut;
 - (b) Morse-kode met flitslamp tot ses woorde per minuut;
 - (c) Internasionale Seinkode.
2. Die praktiese gebruik van 'n skeepsradiorigtingsoeker.

V. GESAGVOERDER VAN 'N SKIP OP VREEMDE VAART.

(1) VRAESTEL 1. (Skriftelik).

PRAKTIESE NAVIGASIE.

(3 uur).

- (a) 'n Kort herhalingsvraestel in Navigasie oor die leerplan vir Tweede Navigasie-offisier en Hoofnavigasie-offisier. Die vraestel kan ook kaartwerk en loodskuns dek.
- (b) Die Britse Admiraliteitsmetode van getyvoorspelling en die gebruik van harmoniese konstante. (Getytafels van Britse Admiraliteit.)

(2) VRAESTEL 2. (Skriftelik).

MAGNETIESE EN TOLKOMPAS.

(3 uur).

Breedvoeriger kennis van die elementêre beginsels van magnetisme as wat van 'n Hoofnavigasie-offisier vereis word:—

- (a) Die omgekeerde kwadratewet, eenvoudige probleme met eenheidspole. Die veldsterkte, magnetiese moment van 'n magneet, die periode van 'n hangende magneet wat in die aarde se veld vibreer.
- (b) Magnetiese kompas: Die metode om die uitwerking van die skip se magnetiese veld op die magnetiese kompas te bepaal en deur middel van komponente daarvoor te vergoed. Die benaderde koëffisiënte A, B, C, D, en E en hul gebruik. Toestande wat koëffisiënte A en E kan voortbring. Konstante Lambda en Mu. Die skeepsvermenigvuldiger. Metodes om 'n deviasietafel te verkry. Ontleding van 'n deviasietafel om benaderde koëffisiënte te verkry. Bepaling van die deviasie veroorsaak deur die skip se permanente magnetisme en/of geïnduseerde magnetisme in vertikale sagte yster deur middel van waarnemings in twee magnetiese breedtegrade wat ver van mekaar verwyder is.
- (c) Algemene beginsels van kompaskorreksie en die metode van korreksie vir koëffisiënte B, C en D. Die oorsaak en uitwerking van oorblywende magnetisme en Gaussfout. Plasing van kompas, veral uit die oogpunt van die nabyheid van magnetiese materiaal en elektriese toestelle. Oorheffing, die oorsaak en uitwerking daarvan en die metode van korreksie. Die uitwerking van oorheffingmagnete op sagteyster-korrektors.
- (d) Tolkompas. Breedvoeriger kennis van die teorie as wat in die geval van Hoofnavigasie-offisier verlang word, maar wiskundige bewyse sal nie vereis word nie. Moet boonop die volgende insluit: Koers- en snelheidsfout. Korreksie vir breedtegraad. Ballistiese defleksie en sy verband met koers- en snelheidsfout. Rolfout en hoe om dit tot die minimum terug te bring. Die vernaamste dele van 'n tolkompas en die herhaaltelsel. Die belangrikste fundamentele verskille in die bou van die beter bekende tipes tolkompasse en die metodes wat aangewend word om die vernaamste foute uit te skakel of daarvoor toe te gee.

(3) VRAESTEL 3. (Skriftelik).

SKEEPSBOU EN -STABILITEIT.

(3 uur).

- (a) Breedvoeriger kennis van skeepsbou as wat vir laer grade sertifikate vereis word. Die spanbord en sy gebruike. Rigplaat en buigmetodes. Algemene struktuur. Kiele, spante, voorstewe, skroefraam en roerstewe, dwars- en langslêers, deurlopende middelplate, kolsens en tussenribse plate, dubbele bome, systringers, huidbeplating, skotte, dieptenks, dekstutte, skroefsteune, roere. Bobou. Maste en laaibome.
- (b) Tipes vaartuie, bv. algemene koopvaarders en olietenkskepe. Sterkte en bou in verhouding tot die doel waarvoor hulle gebruik word.
- (c) Klassifikasie van skepe. Opnames. Algemene idees oor tonnemaatmeting. Vryboord en in breë trekke toewysingsvoorwaardes.
- (d) Onmiddellike behandeling van ongelukskade—botsing, slegte weer, stranding. Algemene idees oor sweiswerk by die herstel van skepe. Opstel van eenvoudige spesifikasies. Die reëling van eenvoudige herstelwerk.
- (e) Vollediger kennis van stabiliteit as wat van Hoofnavigasie-offisier vereis word. Eenvoudige berekenings met volumes, momente en die uitwerking van vryoppervlakte van vloeistowwe. (Bewyse van formules sal nie vereis word nie.) Uitwerking van 'n lek onder in en van die oorstrooming van kompartemente. Permeabiliteit. Trim en moment om trim te verander. Stabiliteit en trim wanneer 'n skip op die grond vasloop. Die hellingsproef. Uitwerking van breedte en vryboord op stabiliteit. Praktiese handelinge om stabiliteit van skip ter see te verseker: Dekvrae, eensoortige vrae, hangende gewigte en vrae wat kan skuif. Gevare van 'n skip met 'n groot slagsy en voorsorgmaatreëls by oprigting. Behartiging van ballastens. Inlaai van ballas.

(4) VRAESTEL 4. (Skriftelik).

GESAGVOERERSAKE.

(2 uur).

(Die vereiste wetskennis word beperk tot die vernaamste punte van Wet 57/1951 en Handelsreg wat 'n gesagvoerder moet ken ten einde die sake van 'n skip te behartig. As daar beperkings op die uitlossing van olie of olierige water in die see bestaan, word kennis van sodanige beperkings egter vereis.)

- (a) Registrasie van skepe. Die registrasiesertifikaat en sy wetlike betekenis.
- (b) Sertifikaat en ander dokumente wat op 'n skip moet wees, hoe hulle verkry word en hoe lank hulle geldig is. Suez- en Panama-kanaalsertifikaat.
- (c) Indiensneming, ontslag en beheer van die bemanning van 'n skip. Bemanningskwalifikasies. Skip se Ooreenkoms met die Bemanning. Lone en ander besoldiging. Dissipline en optrede in die geval van oortredings. Boetes en verbodings. Drosters, oorlede seelui, indiense neming van plaasvervangers.
- (d) Die amptelike skeepsjoernaal en die wet betreffende inskrywings.
- (e) Akkommodasie vir bemanning.
- (f) Higienie in skepe, woonruimtes, ruime, ens. Water. Vars en verduursaamde voedsel. Vereiste prosedure aan boord in gevalle van aansteeklike of ander siekte of 'n ongeluk. Kwarantynprosedure. Berokking.
- (g) In- en uitklaring van 'n skip.
- (h) Laslynmerke en hul algemene en seisoensgebruik. Vereiste inskrywings en verslae met betrekking tot vryboord en diepgang.
- (i) Die veiligheid van die skip, bemanning en passasiers. Hulp aan skepe in nood, en berging. Pligte in geval van botsing en ongeluk.
- (j) Die wet betreffende die aanmelding van ys en verlate skepe. Verpligte en nie-verpligte loodsing.
- (k) Die betekenis van die uitdrukking „passasierskip”.
- (l) Algemene kennis van skeepvaartpraktyk en -dokumente, veral bevrachtingskontrakte en vragbriewe, en 'n begrip van hul vernaamste klousules, bv. vrag, deviasie, altyd vlot, ys, lêdae, oorlêgeld, versending. Proteste. Seewaardigheidsertifikaat. Eenvoudige kennis van die wet betreffende die vervoer van vrag en die skeepseienaars se aanspreeklikheid en pligte.
- (m) Kennis van die belangrikste klousules in 'n seeversekeringspolis. Die betekenis van awery. Partikuliere awery. Algemene awery. Prosedure in die geval van algemene awery. Prosedure by 'n vlughawe. Lloyds-agente.

(5) VRAESTEL 5. (Skriftelik).

ELEMENTÊRE INGENIEURSWESE EN ELEKTRISITEIT, MET INBEGRIIP VAN ELEKTRONIESE NAVIGASIEHULP-MIDDELS.

(3 uur).

1. Ingenieurswese.

- (a) Die betekenis van die algemene ingenieursterme „waarneembare warmte”, „latente warmte”, „versadigde stoom”, „oorverhitte stoom”, „arbeid” en „krag”, „perdekrag”, „skroefsteek”, „slip”.
- (b) Eenvoudige kennis van die volgende: Tipes skeepsketels, steenkool- en oliegestookte oonde; prosedure vir die opwekking van stoom. Die werking van die suierstoommasjien, turbinemasjinerie en dieselenjins. Prosedure wanneer enjins opgewarm, gedraai, aangesit, afgeskakel en omgestel word.
- (c) Die gebruik van die kondensator, verdamer en warmwaterbak. Gebruik van sirkulasie-, lug-, toevoer-, lens- en ballaspompe. Klepkaste.
- (d) Brandstofverbruik en voordelige snelhede, raming van minimum brandstofverbruik om 'n bepaalde seereis te voltooi. Eenvoudige slipprobleme.
- (e) Eenvoudige kennis van die tipes verkoelingstelsels wat op skepe gebruik word.

2. Elektrisiteit.

- (a) Die eenvoudige alternator. Wisselstroom; frekwensie, faseverhouding tussen twee wisselende hoeveelhede; uitwerking van induktansie, kapasiteit en weerstand. Resonansie. Ingestemde kringe. Die kragtransformator. Die eenvoudige telefoon en mikrofoon.
- (b) Rf-ossilasies. Uitstraling van elektromagnetiese golwe, in vrye ruimte—frekwensie, snelheid en golflengte en hul onderlinge verhouding. Ontvangs van elektromagnetiese golwe. Invloed van die ionosfeerbodemgolf, ruimtegolf.
- (c) Termioniese buise. Warmte-uitstraling. Diodebuis—gebruik as 'n gelykrichter. Triodebuis—gebruik as 'n versterker en gebruik as eenvoudige ossillator.
- (d) Katodestraalbuis—bou en werking; elektrostatiese en elektromagnetiese buiging. Die tydbasis soos toegepas op katodestraalbuis.

3. Elektroniese navigasihulpmiddels.

- (a) Eenvoudige kennis van die werking van radar. Vertonings, onderskeiding van afstand en peiling, kalibrering, afstandmerkers, saamkyk, parasieteggo's, sylobeffekte, blinde streke, anomale voortplanting en invloede van die weer. Die gebruik daarvan om botsings te voorkom en as navigasihulpmiddel, en 'n besef van sy beperkings.
- (b) Die algemene beginsels ten grondslag van hiperboliese navigasie. Fundamentele verskille tussen verskillende stelsels.
- (c) Algemene kennis van radiorigtingbepaling op 'n skip; draailus- en goniometerstelsels. Maksimum en minimum seine; oord. Kwadrantfout. Kalibrering. Uitwerking van sonsondergang en -opgang. Kuseffekte. Algemene kennis van radiorigtingbepalingsstelsels op land.
- (d) Die algemene beginsels van eggoloding. Transmissiemetodes. Tydreëlaar. Die ontvanger. Metodes van optekening. Betroubaarheid van aanduidings.

(6) VRAESTEL 6. (Skriftelik).

WEERKUNDE.

Benewens die leerplan vir Hoofnavigasie-offisiere:—

- (a) Die vernaamste wolktipes.
- (b) Eenvoudige gedagtes oor lugmassas en fronte.
- (c) Adiabatese veranderinge in die atmosfeer. Stabiliteit en onstabiliteit.
- (d) Die frontteorie oor die ontstaan van laagdrukgebiede.
- (e) Opstelling van 'n sinoptiese kaart (fronte uitgesluit) aan die hand van 'n aantal gekodeerde groepe soos aangegee in dele V en VI van die Weerberigte vir Skeepvaart.
- (f) Dekodering van groepe soos aangegee in die internasionale analisekode (deel IV), Weerberigte vir Skeepvaart, en tekening van die weerkaart.
- (g) Die gebruik van 'n sinoptiese kaart of weerkaart om die waarskynlike weer en verwagte veranderinge op 'n bepaalde punt of punte af te lei.
- (h) Die vernaamste tipes drywende ys en hul oorsprong. Algemene gedagtes oor verspreiding en seisoensbewegings. Navigasie in die omgewing van ys.
- (i) Algemene punte om in gedagte te hou wanneer seeroetes gekies word.

(7) MONDELING.

1. (a) Buitengewone omstandighede. Verlies van roer; verskuiwing van 'n beskadigde roer; konstruksie van noodroer. Maak en tewaterlating van vlotte. Botsing. Lekkasies. Beskadiging van allerlei aard. Handherstelwerk en voorsorgmaatreëls in gevalle van ongelukke. Op die grond vasloop—hoe om die skip weer vlot te maak. 'n Vaartuig laat strand. Stappe wat gedoen moet word wanneer vaartuig onttrederd is en in nood verkeer.
- (b) Beveiliging van bemanning en passasiers in die geval van skipbreuk. Verlating van 'n verongelukte skip. Vuurpyle en vuurpylapparaat. Verbindings met die strand.
- (c) Verlening van hulp aan 'n vaartuig in nood. Redding van bemanning in 'n onttrederde skip.
- (d) Op sleeptou te neem en geneem te word.
- (e) Maneuvers in slegte weer. Voorsorgmaatreëls voor anker en ter see. Gebruik van olie. Ankering en die gebruik van ankers en kables onder alle toestande. Nadering van riviere en hawens en maneuvring daarin.
- (f) Droogdokking. Algemene prosedure en voorsorgmaatreëls wat getref moet word. Verspreiding van gewig. Droogdokking met volle vag vir inspeksie van skroewe of asse. Kimblokke. Vlotlating van vaartuig. Om by 'n hawe om sake- en tegniese redes met 'n beskadigde vaartuig en/of vag aan te doen. Beveiliging van vag.
- (g) Voorkoming van brand ter see. Selfontbranding. Uitvoerige kennis van die gebruik van brandblustoestelle en die voorsorgmaatreëls wat by die gebruik daarvan getref moet word. Spesiale aandag aan die blus van stookoliebrande.
- (h) Metodes vir die berokking van ruime en woonruimtes en veiligheidsmaatreëls wat daarby getref moet word.
- (i) Algemene organisasie van 'n skip se werk, en hantering en opleiding van bemanning. Kennis van opleidingsgeriewe beskikbaar vir lede van die bemanning.
- (j) Kompensering en verstelling van kompas. Demonstrasies op Beall se kompasdeviasieskoop.
2. Regulasies vir die voorkoming van botsings ter see, ens., soos uiteengesit in paragraaf 5 (a) van die leerplan vir die mondelinge en praktiese eksamen vir Tweede Navigasie-offisier.
3. As hy dit nodig ag vanweë 'n swaakteit wat die kandidaat openbaar, kan die eksaminator aan die kandidaat vrae stel wat uit die skriftelike werk voortspruit.

(8) SEINE.

Die stuur en ontvang van seine in—

- (a) semafoor tot agt woorde per minuut;
- (b) Morse-kode met flitslomp tot ses woorde per minuut;
- (c) Internasionale Seinkode.

VI. GESAGVOERDER VAN 'N SKIP OP VREEMDE-VAART—SPESIALE GRAAD.

Algemeen.

Van kandidate word voldoende wiskundige en wetenskaplike kennis verwag om hulle 'n deeglike begrip van hul tegniese vakke te gee. Kandidate sal mondeling in seemanskap geëksamineer word. Die leerplan vir enige vak word geag die leerplan (indien daar een is) vir sertifikate van 'n laer graad in te sluit.

DEEL A.

(1) VRAESTEL 1. (Skriftelik).

HANDELS- EN REGSKENNIS.

- (a) Die wet betreffende registrasie, gesagvoerders en seeliede, passasiers- en immigrantskepe vir sover dit die gesagvoerder aangaan. Die veiligheid van skepe (klasse I en VII); spesiale skeepsondersoeke en -howe gedek deur Wet 57/1951; aflewering van goedere; vervoer van goedere per skip; vergaan en berging; loodsing; oliebesoedeling; inhoud van kennisgewings uitgereik deur die Departement van Vervoer.
- (b) Die algemene behartiging van skeepsaak, -dokumente en -prosedure by doeane- en Koopvaardymeesterskantore vir sover die gesagvoerder met hulle te doen het.
- (c) Bevrachtingskontrakte: Die kontrak, nakoming van die kontrak; vragbriewe; aanspreeklikheid van skeepseienaars; lêgeld; vraggeld; rentensiereg; skadevergoeding.
- (d) Seeversekering: Verskillende soorte seepolisie; die sluitnota; versekerbare belang; openbarings en voorstellings; uitdruklike en stille waarborge; betekenis van die uitdrukkinge en klousules gebesig in seeversekeringspolisie; totale verlies—werklik en veronderstel; verlating; algemene awery; besondere awery; die „memorandum”; York-Antwerpen-reëls.
- (e) Administrasie en funksionering van hawens. Gebruik van kaaie, skure, pakhuise, dokke en waterkanterminusse. Hyskrane en hul gebruik—stoom-, elektriese, hidrouliese en loopkrane—met inbegrip van drywende kolelaai-apparaat, mineraal- en graansuiers. Ander toestelle gebruik in die hantering van vag. Droogdokke. Dryfdokke.

(2) VRAESTEL 2. (Skriftelik).

SKEEPSBOU EN -ONDERHOUD.

- (a) Tipes skepe uit die oogpunt van sterkte, vorm en bou. Materiale gebruik in skeepsbou, asook kennis van hul eienskappe, gebruik en beperkinge. Uitgloeiing en toets van materiale.
- (b) Onderhoud van struktuur en uitrusting, met inbegrip van moderne metodes vir die bestryding van korrosie.
- (c) Bou: Omvattende kennis van die verskillende boudede, tesame met hul funksies en die metodes om hulle by ander dele van die struktuur aan te sluit.
- (d) Sweisprosesse, naamlik met oksii-asetileen, weerstandswaising, vlamboogswaising.
- (e) Soorte sweislaste (stuiksweislas, hoeksweislas); besonderhede van stui-, naat- en oorslaglaste. Vorms van sweiswerk (onderbroke sweislas, kettingshoeksweislas, verspringende onderbroke sweislas). Lloyds se vereistes ten opsigte hiervan.
- (f) Voordele en nadele van sweising. Die algemene foute, bv. gebrek aan penetrasie, poreusheid. Toetse vir sweislaste en materiale. Volgroe van sweiswerk.
- (g) Algemene gedagtes oor ondervinding.
- (h) Brandbeskermings- en -waarskuwingstelsels.
- (i) Skeepswerfprosedure: Algemene kennis van die praktyke gevolg vanaf die tekenkantoor tot die voltooide skip, tewaterlating inbegrepe.
- (j) Herstelwerk as gevolg van beskadiging en slytasie. Noodherstelwerk.
- (k) Laslyn: Toewysingsowerhede, ondersoeke, sertifikate. Algemene kennis van die voorwaardes betreffende die toewysing van vryboord en van die faktore rakende die berekening van vryboord.
- (l) Tonnemaat: Kennis van die algemene beginsels betreffende die bepaling van Suid-Afrikaanse tonnemaat. Suez- en Panama-kanaalsertifikate.
- (m) Indelingsvereniginge: Hul funksies en vereistes met betrekking tot die bou en ondersoek van staalskepe.
- (n) Proefvaarte: Die hou van snelheids- en hanterbaarheidstoetse.

(3) VRAESTEL 3. (Skriftelik).

KAARTKONSTRUKSIE EN SEE-OPNAME.

- (a) Die kandidaat moet twee voltooide kaarttraamwerke inlewer wat as sy eie werk gesertifiseer word. Hulle moet bestaan uit—
- (i) 'n Mercatorkaart met 'n skaal van 1: 500,000 (by breedtegraad 62° 00') tussen breedtegraad 61° 20'S en breedtegraad 62° 40'S en tussen lengtegraad 73° 00' O en lengtegraad 77° 00' O. Die kaart moet 'n kort stuk hipotetiese kuslyn en minstens twee dieptekontoere toon. Alle boei, wrak-, lig- en ander simbole en alle drukwerk moet aan geldende Admiraliteitskaartgebruik voldoen. Sferoidale meridiaandeeltafels moet gebruik word om die breedteskaal te bepaal.
- (ii) 'n Plan met skaal 1: 25,000, totale afmetings van minstens 12 duim by 12 duim, bevattende 'n verwysingspunt in 51° 10' 55" N, 17° 08' 38" W.

Die plan moet vir breedte- en lengtegraad in minute en tiendes gegradeer wees en 'n skaal van seemyle en kabellengtes moet ook ingevoeg word. Geen topografiese besonderhede word vereis nie. Aanvaar dat 6,083 voet die ekwivalent van een breedteminuut en 3,825 voet die ekwivalent van een lengteminuut is.

Hierdie werk moet met ink gedoen en alle verband hebbende berekenings by elke kaart ingesluit word.

Elke kaart moet die byskrif „Ek sertifiseer dat hierdie kaart my eie selfstandige werk is” bevat, die handtekening van die kandidaat op hê en deur die kandidaat gedateer wees. Indien die kandidaat in hierdie vraestel of in die hele deel A druipt, sal hy by elke volgende poging 'n addisionele kaart moet lewer, naamlik of die een genoem in bostaande paragraaf (i) of die een genoem in bostaande paragraaf (ii).

Hierdie kaarte moet met die oog op eksaminering en goedkeuring aan die eksaminator by die eksamenhawe gestuur word. Kandidate moet hierdie kaarte in hul eie belang so vroeg doenlik voor die eksamendatum inlewer.

(b) Die teorie en tekening van kaarte volgens die beginsel van Mercator. Kandidate sal versoek word om so 'n skaal te teken en punte te stip of om 'n verstrekte diagram of blok te vergroot. Hierdie werk kan met potlood gedoen word.

(c) Hidrografiese opmeting. Die raamwerk van die opmeting, triangulasie, opmeetmerke, trekmetings, hoogtes en hoogtemeting, stipvel, lodings, kuslynbepaling, topografie, getye en getystrome, opmeting buite gesigsafstand van land, lopende opmetings, sketsopmetings, opmetings van 'n rivier, soek na aangemelde gevare. Metodes om kussposisies in verband met hidrografiese opmeting te bepaal. 'n Begrip van die beginsels van die gebruikte instrumente word vereis, maar nie 'n uitvoerige kennis nie.

(4) VRAESTEL 4. (Skriftelik).

WEERKUNDE, OSEANOGRAFIE EN EKONOMIESE AARDRYKSKUNDE.

(a) Weerkunde.

(i) Die atmosfeer; wisseling van druk, digtheid en temperatuur; voggehalte, versadiging, doupunt, vervaltempo's, potensiële temperatuur; bestendigheid en onbestendigheid, onrus; beweging van lugmassas, konveksie, straling, wind, met inbegrip van bowind.

(ii) Voorspelling en die organisasie daarvan; algemene weeropsomming, die frontteorie, die vorming en beweging van laagdruk- en ander weerstelsels, wolkontwikkeling, oorverkoelde water, ontstaan van mis en newel, reën, hael, sneeu, donderstorms.

(iii) Klimatologie; die verskillende klimaattipes; die algemene verspreiding van weerslelemente en hul uitwerking op klimaat, seisoensverandering, insolasie, heersende winde; algemene behandeling van plaaslike weerkenmerke.

(iv) Ontstaan van ys, drywende ys, ysgrense. Yspatrolle- en Waarnemingsdienste.

(b) Oseanografie.

Algemene eienskappe van die see: Oseaandieptes, oppervlaktetemperatuur, digtheid, soutgehalte, oseaanstrominge.

(c) Ekonomiese aardrykskunde.

(i) Die geografiese en ekonomiese faktore waardeur wêreldproduksie en goedereruil, vervoer en wêreldhandel bepaal word.

(ii) Vernaamste produkte en hul herkoms: Voedsel: Graan, vleis, suiwelprodukte, vis, vrugte, suiker, plantaardige olies, tee en koffie. Grondstowwe: Hout, rubber, swawel, yster en staal, steenkool, sout, erts, olies en hul produkte, tekstielplante en wol.

Vervaardigde goedere: Nywerheidsproduksie. Handel in vervaardigde goedere.

DEEL B.

(1) VRAESTEL 5. (Skriftelik).

WISKUNDE.

(a) Teorie van vierkantsvergelykings en perke van die funksie vir reële waardes van die wisselbare probleme met betrekking tot vierkantsvergelykings.

(b) Herleiding van vergelykings $y = ax^b$ en $y = ab^x$ tot reguitlyngrafieke. Bepaling van konstantes op grond van proefondervindelike gegewens.

(c) Eienskappe van hiperbole van navigasiebelang.

(d) Trigonometriese funksies van saamgestelde hoeke en hoekveelvoude van enige grootte. Herleiding van sommige van trigonometriese funksies tot produkte en omgekeerd. Vlakdriehoeksmetkundige probleme in twee of drie dimensies.

(e) Die meetkundige eienskappe van die bol en boldriehoek. Bewyse van die volgende formules: Kosinus, sinus, vierdelig, half-versinus, reëls van Napier en oppervlakte volgens sferiese oormaat. Die pooldriehoek. Oplossing van reghoekige regsydige en skuinsboldriehoek.

(f) Die teorie van die stereografiese projeksie.

(g) Afleiding van formules gebruik in die opstelling van kortmetode-navigasietafels.

(h) Oppervlaktes en volumes van vlak- en ruimtefigure. Reëls van Simpson vir kromlynige figure.

(i) Die gebruik van die binomiese stelling vir positiewe, negatiewe en breukvormige reële indekse. Benaderings.

(j) Gebruik (sonder bewys) van die ontwikkelings van $\sin x$, $\cos x$ en e^x . Benadering, Perke.

(k) Gradiënt van 'n lyn, die differensiaalcoëffisiënt, veranderingstempo. Onderskeiding van 'n funksie, 'n funksie van 'n funksie, 'n produk en 'n kwosient (met inbegrip van trigonometriese, omgekeerde trigonometriese en logaritmiëse funksies). Toepassing op probleme oor toenametempo's, klein foute en maksimums en minimums.

(l) (i) Die idee van integrasie as 'n optelling. Die bepaalde integraal. Integrering tussen grense.

(ii) Standaardintegrasie van eenvoudige algebraïese en trigonometriëse funksies. Eenvoudige oefeninge in gedeeltelike integrasie deur vervanging en deur die gebruik van parsieë breuke.

(iii) Toepassing van eenvoudige figure op oppervlaktes en volumes, bv. sirkels, bolle, keëls, ens., met inbegrip van (a) oppervlaktes onder eenvoudige krommes, bv. paraboolse krommes en krommes met eenvoudige vergelykings, bv. $y = x(1 + x^2)$, en (b) volumes van liggame wat om die x-as van hierdie eenvoudige krommes wentel.

(iv) Benaderde integrasie volgens reëls van Simpson.

N.B.—Vrae sal nie gestel word oor lengtes van krommes of oor die oppervlakte van liggame wat om 'n as wentel of oor hiperboliese funksies of oor integrasie deur herhaalde vermindering of oor differensiaalvergelykings nie.

(m) Stelselmatige foute en ewekansige steekproeffoute. Berekening van gemiddelde en standaarddeviasie van 'n groot monster. Standaardfout en vertroubaarheidsgrense van die gemiddelde.

(2) VRAESTEL 6. (Skriftelik).

ALGEMENE FISIKA.

(a) Statika.

(i) Samestelling en ontbinding van kragte. Parallele kragte. Momente en kragtepare. Toestande vir ewewig onder saamvakkige kragte. Spanning, vervorming, wet van Hooke (met inbegrip van Young se elastisiteitsmodulus), skuifkragte en buigmomente van eenvoudig gestutte balke en vrydraers onder vertikale puntlaste en eenvormig verspreide laste oor die hele of 'n deel van die span.

(ii) Swaartepunte van lamelle en vaste liggame. Stabiele en onstabiele ewewig.

(iii) Eenvoudige masjiene en berekenings daarvoor met of sonder wrywing.

(iv) Wet van Boyle. Barometer. Drukmeters. Hidrouliese pers. Eenvoudige waterpompe met suiers.

(b) Dinamika.

(i) Samestelling en ontbinding van snelhede en versnellings. Betrekklike snelheid. Massa. Gewig. Newton se bewegingswette. Beweging onder swaartekrag. Arbeid, krag, kinetiese en potensiaalenergie. Momentum. Behoud van momentum. Regstreekse skokke; restitusiecoëffisiënt.

(ii) Beweging in 'n sirkel. Eenvoudige harmoniese beweging. Eenvoudige slinger. Trilling van 'n massa aan die punt van 'n elastiese lyn. Newton se wette toegepas op rotasie, d.w.s. die verhouding tussen traagheidsmoment, toegepaste koppel en hoekversnelling. Hoekmomentum. Kinetiese energie van rotasie.

(c) *Warmte en temperatuur.*

(i) Oordrag van warmte; geleiding, konveksie en uitstraling, Newton se wette van afkoeling, termiese geleivermoë; stralingsvermoë; termometrie; temperatuurskale.

(ii) Liniêre, oppervlak- en volume-uitsettingskoeffisiënt van vaste liggame, vloeistowwe en gasse; toestandsverandering; die drieduidige punt.

(iii) Spesifieke warmte, latente warmte en termiese kapasiteit. Oorhitte. Wet van Charles; isotermiese en adiabatiese uitsetting en kompressie van gasse; verkoeling.

(iv) Warmte as vorm van energie. Meganiese ekwivalent van warmte.

(v) Dampdruk; higrometrie; doupunt en betreklike vogtigheid.

(d) *Lig.*

(i) Die wette van weerkaatsing. Weerkaatsing deur vlak- en bolspieëls. Vorming van werklike en virtuele beelde.

(ii) Die wet van ligbreking; brekingsindeks; kritieke hoek; totale interne weerkaatsing. Werklike en skynbare diepte. Prismas. Dun lense. Vorming van beelde deur lense. Beskrywing van achromatiese lense.

(iii) Die straalbreek- en weerkaatsteleskoop; prisma-verkykers. Sekstant; asimutspieël.

(iv) Ligintensiteit, kerskrag en die lumen.

(v) Ligsnelheid. Liggolwe. Die sigbare spektrum. Verstrooiing. Reënboë en koronas. Lugspieëlings en opdoeming.

(e) *Klank.*

Voortbrenging en voortplanting van klank. Frekwensie, golflengte, snelheid. Beginsel van die sirene. Uitwerking van temperatuur en wind op die transmissie van klank. Faktore waardeur snelheid in lug en water beïnvloed word. Terugkaatsing, eggo's. Swewings. Dopplereffek.

(3) VRAESTEL 7. (Skriftelik).

MAGNETISME EN ELEKTRISITEIT.

(a) *Magnetisme.*

(i) Magnetiese eienskappe van materiale; induksie, vatbaarheid en permeabiliteit. Magnetiese uitwerkings van elektriese strome, met inbegrip van berekenings.

(ii) Aardmagnetisme. Inklinasie, totale krag, horisontale krag en vertikale krag. Hoe die deviasie van die kompas deur veranderinge in die waardes van hierdie elemente geraak word. Variasie.

(iii) Skepsmagnetisme. Harde en sagte yster. Permanente, redelik permanente en geïnduseerde magnetisme. Komponente P, Q, R, die stawe a, b, c, d, e, f, g, h, k. Die benaderde koeffisiënte A, B, C, D, E. Hellingsfout. Lambda, Lambda twee en Mu.

(iv) Algemene beginsels van kompaskorreksie. Hoe om die verskillende komponente wat deviasie kan veroorsaak, met inbegrip van die uitwerking van helling en trim, te vind en daarvoor te vergoed.

(v) Kompensasie met behulp van die Klevin-deflektor. Beginsel van die deflektormetode en inligting wat van verkreeë aflesings afgelei kan word.

(vi) Die plasing en opstelling van kompasse met behoorlike inagneming van die nabyheid van magnetiese materiaal, elektriese inrigtings en ander steurende invloede.

(vii) Die teorie van degaussering in skepe toegerus met M-spoele en kompaskompensasie deur middel van B- en hellingsfoutspoole.

(viii) Swaaiende skip en die ontleding van 'n deviasietabel.

(b) *Elektrisiteit.*

Van kandidate sal verwag word om 'n volledige kennis aan die dag te lê van die terrein gedek vir die vorige twee grade. Daarbenewens sal vrae gestel word waarvan die beantwoording 'n kennis van die volgende vereis:—

(i) *Gs-kring:*—

(a) Wette van Kirchhoff en hul toepassings.

(b) Meting van weerstand deur middel van eenvoudige brugmetodes. Beginsel van Megger en sy toepassing.

(c) Beginsels van elektrolise; begrip van die beginsels van katodiese beskerming.

(d) 'n Kwalitatiewe behandeling van die uitwerking van induktansie in 'n Gs-kring.

(e) 'n Kwalitatiewe behandeling van die lading en ontlading van 'n kondensator in 'n weerstandskring.

(ii) *Gs-motore en -generators:*—

(a) Eenvoudige verhoudings tussen snelheid, veldsterkte, geïnduseerde e.m.k., ankerstroom en draaimoment. Gedrag van sjunt-, serie- en serieparallelmotore. Die begrip van kragverliese in 'n masjien; rendement. Eenvoudige aansitter vir gelykstroomsjuntmotor. Spanningsbeheer van sjuntindamo.

(b) Die magnetiese relê, bv. in eenvoudige sjuntmotoraansitter met nulspannings- en oorbelaastingsslossers.

(iii) *Ws-motore en -generators:*—Die beginsels van generators van die draaiaanker-, draaiveld- en induktortipe en induksiemotore.(iv) *Ws-kring:*—

(a) Kruin-, gemiddelde en wortel van die gemiddelde kwadraatwaarde van sinuswisselspannings en -strome.

(b) 'n Kwantitatiewe behandeling van die uitwerking van weerstand, induktansie en kapasitansie in 'n seriewisselstroomkring; reaktansie.

(c) Eenvoudige voorbeelde van vektorbehandeling van kombinasies van weerstand, induktansie en/of kapasitansie in 'n seriewisselstroomkring; impedansie; resonansie.

(d) Krag in 'n Ws-kring; arbeidsfaktor.

(v) *Hoëfrekwensiekringe:*—

(a) Die grondbeginsels van heterodine- en superheterodineontvangs.

(b) Beginsels van onderdrukking van radiosteuring deur elektriese uitrusting.

(c) Elementêre kennis van die beginsels van gerigte antennes. Die vertolking van die horisontale pooldiagram, bv. in die geval van die eenvoudige lusantenne en radarantenne.

(d) 'n Begrip van die betekenis van die uitdrukking „antennewind” en 'n kennis van die gebruik van die desibel as 'n eenheid wat by die meting van relatiewe krag gebruik word.

(e) Die oorsake van vaste en veranderlike foute waaraan navigasiehulpmiddels wat in Suid-Afrikaanse skepe gebruik word, onderworpe is.

(4) VRAESTEL 8. (Skriftelik).

TEORIE VAN SKEEPSBOU EN HIDROSTATIKA.

(a) Digtheid; soortelike gewig; flottasie en drywing. Die hidrometer. Die stelling van Archimedes; drukpunt; vloeistofdruk en sy verhouding tot totale druk. Stabiliteit van drywende voorwerpe. Berekening van drukpunt met behulp van algemene reëls.

(b) *Volumes en oppervlaktes.*—Die teorie en toepassings van die gewone reëls vir die bepaling van die watervlak- en dwarsdeursnee-oppervlaktes en verplasing van 'n vaartuig, die drukingspunt en die flottasiepunt.

(c) *Traagheidsmomente.*—Die bepaling van oorlangse en transversale traagheidsmoment van 'n watervlak.

(d) *Transversale stabiliteit:*—

(i) Die algemene bewys van $DM = I/V$. Toepassings van hierdie formule op kasvormige en skepsvormige vaartuie. Attwood se formule vir statiese stabiliteit.

(ii) Bewys van formule vir loodregte sye en sy toepassing op—

(a) Iolhoek van onstabiele skip;

(b) helling as gevolg van transversale verskuiwing van 'n gewig in 'n vaartuig met SM Nul.

- (iii) Teorie en berekenings in verband met die binnelating van water, vernameklik met betrekking tot—
 vermeerderde diepgang as gevolg van 'n lekplek onder in 'n kasvormige vaartuig;
 permeabiliteit;
 uitwerking van vrye oppervlakte;
 helling as gevolg van die binnekoms van water in 'n sykompartement.

(e) *Oorlangse stabiliteit*.—Bewys van die formule vir M.T.V.1°.

Berekenings in verband met trimverandering as gevolg van—

- oorlangse verskuiwing van gewig(te);
 byvoeging van gewigte;
 lekplekke in kompartemente;
 verandering van digtheid van water waarin 'n skip dryf;
 (FP nie vertikaal bokant DP nie);
 probleme oor diepgang wanneer FP nie op middellengte is nie.

(f) *Droogdokking*.—(i) 'n Begrip van en berekenings betrokke by—

- (a) verandering in stabiliteit tot die tydstop wanneer vaartuig deur die blokke gedra word;
 (b) verandering in stabiliteit nadat waterhoogte daal;
 (c) diepgang waarop skip onstabiel word.

(ii) Kennis van voorsorgmaatreëls wat getref moet word.

(g) Spannings en vervormings, buigmomente en skuifkragte. Kennis van spannings en vervormings deur skepe ondergaan. 'n Begrip van die „vragkrommes“, „skuifkragkrommes“ en „buigmomentkrommes“ van drywende vaartuie.

(h) *Stabiliteitsdata*.—Omvattende kennis van die gebruike van alle soorte hidrostatiese, stabiliteits- en spanningsdata wat aan skepe verstrekk word.

(i) *Rol van skepe*.—Vrye gerol in stil water. 'n Nie-wiskundige kennis van rol tussen golwe.

(5) VRAESTEL 9. (Skriftelik).

NAVIGASIE EN NAVIGASIEHULPMIDDELS.

(a) Die driehoek en foute met astronomiese en aardstandlyne.

(b) Aardrefraksie. Duiking en afstand van see- en kushorisonste.

(c) Afdeling van die formules en die gebruik van die volgende:—

Meridiaanherleidingstafels.

Poolsterkorreksies en -tafels.

A-, B- en C-tafels.

Veranderingstempo's van asimut en hoogte.

Maksimum en meridiaanhoogtes.

Lengte van berekening deur middel van gelyke hoogtes.

Die ewening van gelyke hoogtes.

Verband tussen foute met betrekking tot hoogte, lengtegraad, breedtegraad en uurhoek.

Standlyne wanneer hoogte baie groot is. Opkom en ondergang van son en maan; skemering. Teorie van die sekstantnonius. Sekstantkorreksies; kollimasie, sentreerfout, sekstantparallaks, gebruik van kunsmatige horisonte en agterhoeke. Formules en hul parallaksafdeling en vergroting van die maan se halwe middellyn. Gebruik van radiorigtingsoekerstandlyn, kromme van konstante peiling en bewys van konvergensie. Vorm van die aarde. Geosentriese en geografiese breedte, middelbreedte. Tydsverewening en sy komponente. Skynbare gang van son, maan en planete. Sideriese, sinodiese en nodiese omloopstye. Sarostydkring. Algemene gedagtes oor presessie en nutasie. Verskillende metings van jare, maande en dae. Algemene kennis van ekliptikale perke. Elementêre kennis van Wette van Kepler. Stergroottes. Inhoud van „Abridged Nautical Almanac“.

(d) Beskrywing en gebruik van alle apparaat wat vir die beveiliging van skeepvaart in die oop see en langs die kus gebruik word, met inbegrip van radar en radiohulpmiddels en radiopeilings- en klankdieptepeilingsuitrusting.

(e) Teorie van getye; getyvoorspelling; getyafels en hul gebruik; getystrome; abnormale getye.

(f) Teorie van die giroskoop en die tolkompas. 'n Goeie teoretiese en praktiese kennis van die Brown- of Sperry-M.N.-tipe kompas, met inbegrip van ballistiese beheer, dempingsmetodes, stelsel van aanvulling en herhaling, ballistiese defleksie, koers- en -snelheidsfout, slingerfoute.

MONDELING.

Die kandidaat sal geëksamineer word in die seemanskapleerplan wat vir die sertifikaat van 'n gesagvoerder van 'n skip op vreemde vaart [sien paragraaf (7), seksies 1 en 2, onder die opskrif "V. Gesagvoerder van 'n skip op vreemde vaart" in hierdie aanhangsel] voorgeskryf is en daar sal van hom verwag word om in sy antwoorde 'n hoër peil as 'n kandidaat vir 'n gesagvoerdertifikaat te bereik. Seine sal egter nie deel van die eksamen uitmaak nie. Die mondelinge eksamen kan aan die einde van enige deel van die eksamen afgeneem word indien die kandidaat die dele afsonderlik aflê. 'n Kandidaat wat die mondelinge eksamen deurmaak voordat hy in albei dele van die skriftelike eksamen geslaag het, sal 'n afsonderlike sertifikaat te dien effekte ontvang. ('n Kandidaat wat een van die dele van sy skriftelike eksamen deurmaak maar in die mondelinge eksamen gedruip het, sal na goedvinde van die eksaminator toegelaat word om die mondelinge eksamen weer afsonderlik af te lê.)

AANHANGSEL 4.

T.V. 5/113.

REPUBLIEK VAN SUID-AFRIKA.

BEKWAAMHEIDCERTIFIKAAT AS
 100 OF MEER BRUTO REGISTERTON.

VAN 'N KUSVAARDER VAN

No. _____

AAN Nademaal u aan al die vereistes wat by wet voorgeskryf is vir die verlening aan u van 'n bekwaamheidsertifikaat as _____ van 'n kusvaarder van 100 of meer bruto registerton, voldoen het, word hierdie sertifikaat kragtens artikel _____ van die Handelskeepvaartwet, 1951 (Wet No. 57 van 1951), soos gewysig, aan u verleen.

Gedateer te _____ hierdie _____ dag van _____ 19 _____

Minister van Vervoer.

PERSOONSBEKRYWING VAN KANDIDAAT.

Lengte.		Kleur van oë.	Kleur van hare.	Geboortedatum.	Geboorteplek.	Ras.	Persoonlike merke of eienaardighede (indien enige).
Voet.	Duim.						

Hierdie sertifikaat word uitgereik op grond van 'n eksamen geslaag te _____ op die _____ dag van _____ 19____.

Kantoordatumstempel.

Handtekening van bevoegde beampte of eksaminator.

Handtekening van houer.

STRAWWE VIR BEDRIEGLIKE HANDELINGE IN VERBAND MET HIERDIE SERTIFIKAAT.

Enigeen wat—

- (a) 'n bekwaamheidsertifikaat wat kragtens Wet 57/1951 uitgereik is, vervals; of
 (b) 'n vervalste dokument wat heet 'n bekwaamheidsertifikaat te wees wat kragtens Wet 57/1951 uitgereik is, vertoon of andersins uitgee terwyl hy weet dat dit vervals is; of
 (c) 'n bekwaamheidsertifikaat wat ingetrek of opgeskort is of wat verstryk het of waarop hy nie geregtig is nie, wetens vertoon of andersins gebruik; of
 (d) 'n bekwaamheidsertifikaat aan 'n persoon leen van wie hy weet dat hy nie daarop geregtig is nie, of toelaat dat so 'n persoon dit gebruik, begaan 'n misdryf en is by skuldigbevinding strafbaar met 'n boete van R1,000.00 of met gevangenisstraf van twee jaar of met beide sodanige boete en gevangenisstraf [sien artikels 313 (2) en 315 van Wet 57/1951].

L.W.—Enigeen, behalwe die eenaar, wat in besit kom van hierdie sertifikaat, moet dit dadelik aan die Sekretaris van Vervoer, Pretoria, stuur.

ADDISIONELE KWALIFIKASIES.

T.V. 5/112.

REPUBLIEK VAN SUID-AFRIKA.

BEKWAAMHEIDSERTIFIKAAT AS _____ VAN 'N SKIP OP VREEMDE VAART.

No. _____

AAN _____

Nademaal u aan al die vereistes wat by wet voorgeskryf is vir die verlening aan u van 'n bekwaamheidsertifikaat as _____ van 'n skip op vreemde vaart, voldoen het, word hierdie sertifikaat kragtens artikel _____ van die Handelskeepvaartwet, 1951 (Wet-No. 57 van 1951), soos gewysig, aan u verleen.

Gedateer te _____ hierdie _____ dag van _____ 19____.

Minister van Vervoer.

PERSOONSBEKRYWING VAN KANDIDAAT.

Lengte.		Kleur van oë.	Kleur van hare.	Geboortedatum.	Geboorteplek.	Ras.	Persoonlike merke of eienaardighede (indien enige).
Voet.	Duim.						

Hierdie sertifikaat word uitgereik op grond van 'n eksamen geslaag te _____ op die _____ dag van _____ 19____.

Kantoordatumstempel.

Handtekening van bevoegde beampte of eksaminator.

Handtekening van houer.

STRAWWE VIR BEDRIEGLIKE HANDELINGE IN VERBAND MET HIERDIE SERTIFIKAAT.

Enigeen wat—

- (a) 'n bekwaamheidsertifikaat wat kragtens Wet 57/1951 uitgereik is, vervals; of
 (b) 'n vervalste dokument wat heet 'n bekwaamheidsertifikaat te wees wat kragtens Wet 57/1951 uitgereik is, vertoon of andersins uitgee terwyl hy weet dat dit vervals is; of
 (c) 'n bekwaamheidsertifikaat wat ingetrek of opgeskort is of wat verstryk het of waarop hy nie geregtig is nie, wetens vertoon of andersins gebruik; of
 (d) 'n bekwaamheidsertifikaat aan 'n persoon leen van wie hy weet dat hy nie daarop geregtig is nie, of toelaat dat so 'n persoon dit gebruik, begaan 'n misdryf en is by skuldigbevinding strafbaar met 'n boete van R1,000.00 of met gevangenisstraf van twee jaar of met beide sodanige boete en gevangenisstraf [sien artikels 313 (2) en 315 van Wet 57/1951].

L.W.—Enigeen, behalwe die eenaar, wat in besit kom van hierdie sertifikaat, moet dit dadelik aan die Sekretaris van Vervoer, Pretoria, stuur.

ADDISIONELE KWALIFIKASIES.

T.V. 5/112A.

REPUBLIEK VAN SUID-AFRIKA.

BEKWAAMHEIDCERTIFIKAAT AS GESAGVOERDER VAN 'N SKIP OP VREEMDE VAART—SPESIALE GRAAD.

No. _____

AAN _____

Nademaal u aan al die vereistes wat by wet voorgeskryf is vir die verlening aan u van 'n bekwaamheidsertifikaat as Gesagvoerder van 'n skip op vreemde vaart—Spesiale Graad, voldoen het, word hierdie sertifikaat kragtens artikel _____ van die Handelskeepvaartwet, 1951 (Wet No. 57 van 1951), soos gewysig, aan u verleen.

Gedateer te _____ hierdie _____ dag van _____ 19____

Minister van Vervoer.

PERSOONSBEKRYWING VAN KANDIDAAT.

Lengte.		Kleur van oë.	Kleur van hare.	Geboortedatum.	Geboorteplek.	Ras.	Persoonlike merke of eienaardighede (indien enige).
Voet.	Duim.						

Hierdie sertifikaat word uitgereik op grond van 'n eksamen geslaag te _____ op die _____ dag van _____ 19____

Kantoordatumstempel.

Handtekening van bevoegde beampte of eksaminator.

Handtekening van houer.

STRAWWE VIR BEDRIEGLIKE HANDELINGE IN VERBAND MET HIERDIE CERTIFIKAAT.

Enigene wat—

- (a) 'n bekwaamheidsertifikaat wat kragtens Wet 57/1951 uitgereik is, vervals; of
- (b) 'n vervalste dokument wat heet 'n bekwaamheidsertifikaat te wees wat kragtens Wet 57/1951 uitgereik is, vertoon of andersins uitgee terwyl hy weet dat dit vervals is; of
- (c) 'n bekwaamheidsertifikaat wat ingetrek of opgeskort is of wat verstryk het of waarop hy nie geregtig is nie, wetens vertoon of andersins gebruik; of
- (d) 'n bekwaamheidsertifikaat aan 'n persoon leen van wie hy weet dat hy nie daarop geregtig is nie, of toelaat dat so 'n persoon dit gebruik,

begaan 'n misdryf en is by skuldigbevinding strafbaar met 'n boete van R1,000.00 of met gevangenisstraf van twee jaar of met beide sodanige boete en gevangenisstraf [sien artikels 313 (2) en 315 van Wet 57/1951].

L.W.—Enigene, behalwe die eienaar, wat in besit kom van hierdie sertifikaat, moet dit dadelik aan die Sekretaris van Vervoer, Pretoria, stuur.

ADDISIONELE KWALIFIKASIES.

T.V. 5/118.

AANHANGSEL 5.

REPUBLIEK VAN SUID-AFRIKA.

DIENSSERTIFIKAAT AS _____ VAN _____

No. _____

NAAM _____

wat aan die bepalings van artikel 80 van die Handelskeepvaartwet, 1951 (Wet No. 57 van 1951), soos gewysig, voldoen het, word hierdie dienssertifikaat toegeken.

Gedateer te _____ hierdie _____ dag van _____ 19____

Sekretaris van Vervoer.

PERSOONSBEKRYWING VAN KANDIDAAT.

Lengte.		Kleur van oë.	Kleur van hare.	Geboortedatum.	Geboorteplek.	Ras.	Persoonlike merke of eienaardighede (indien enige).
Voet.	Duim.						

Handtekening van houer.

Uitgereik by die hawe _____ hierdie _____ dag van _____ 19____

Datumstempel.

Handtekening van bevoegde beampte of eksaminator.

STRAWWE VIR BEDRIEGLIKE HANDELINGE IN VERBAND MET HIERDIE SERTIFIKAAT.

Enigeen wat—

- (a) 'n dienssertifikaat wat kragtens Wet 57/1951 uitgereik is, vervals; of
 (b) 'n vervalste dokument wat heet 'n dienssertifikaat te wees wat kragtens Wet 57/1951 uitgereik is, vertoon of andersins uitgee terwyl hy weet dat dit vervals is; of
 (c) 'n dienssertifikaat wat ingetrek of opgeskort is of wat verstryk het of waarop hy nie geregtig is nie, wetens vertoon of andersins gebruik; of
 (d) 'n dienssertifikaat aan 'n persoon leen van wie hy weet dat hy nie daarop geregtig is nie, of toelaat dat so 'n persoon dit gebruik, begaan 'n misdryf en is by skuldigbevinding strafbaar met 'n boete van R1,000.00 of met gevangenisstraf van twee jaar of met beide sodanige boete en gevangenisstraf [sien artikels 313 (2) en 315 van Wet 57/1951].

L.W.—Enigeen, behalwe die eienaar, wat in besit kom van hierdie sertifikaat, moet dit dadelik aan die Sekretaris van Vervoer, Pretoria, stuur.

ADDISIONELE KWALIFIKASIES.

LIST OF FORMS APPEARING IN THESE REGULATIONS.

ANNEX 1.

Regulation 5. Application to be examined for a Certificate of Competency as.....	T.V. 5/101
Regulation 10. Application for a certified copy of a Certificate of Competency or Qualification or a Certificate of Service....	T.V. 5/103
Regulation 13. Application to be examined in the Colour and Form Vision Tests.....	T.V. 5/104
Regulation 24. Certificate of Watch-keeping Service.....	T.V. 5/108
Regulation 66. Authority for delivery of a Certificate of Competency or Qualification.....	T.V. 5/106
Regulation 66. Results of Examination.....	T.V. 5/107
Regulation 71. Application for a Certificate of Service.....	T.V. 5/105

REPUBLIC OF SOUTH AFRICA.

(Coat of Arms.)

DEPARTMENT OF TRANSPORT.—MARINE DIVISION.

T.V. 5/101

MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.

APPLICATION TO BE EXAMINED FOR A CERTIFICATE OF COMPETENCY AS

* (State here grade of certificate required).

* This form is for use when the certificate required is one of the following grades:—

- Master—Special Grade, Master, Chief or Second Navigating Officer of a foreign-going ship.
 Master or Navigating Officer of a coasting ship of 100 or more gross register tons.
 Skipper, Mate or Boatswain of a fishing, sealing or shore-based whaling boat of 100 or more gross register tons.
 Skipper or Mate of a coasting ship, or a fishing, sealing or shore-based whaling boat of less than 100 gross register tons.

A. Name, etc., of Candidate.

Rotation No. _____

Port of _____

(1) Christian Names (in full).	(2) Surname.	(3) Permanent Address, stating Town, Street, House No. and Name of Person with whom Residing

Date of Birth.			Place of Birth.	(8) Nationality. (If a Citizen by Registration or Naturalisation, state Number of Certificate.)
(4) Day.	(5) Month.	(6) Year.	(7) Town and Country.	

B.—Particulars of all previous certificates (if any) whether issued in the Republic or elsewhere.

(9) No.	(10) Competency or Service.	(11) Grade: Foreigngoing, Coasting, Fishing, Other.	(12) Where Issued	(13) Date of Passing.	(14) If at any Time Suspended or Cancelled, state by what Court or Authority.	(15) Date.	(16) Cause.

C.—Certificate now required.

(17) Grade: Foreign-going, Coasting, Fishing, Other.	(18) Port at which Candidate wishes to be Examined.	(19) Office to which it is to be sent.

D.—If the candidate has previously been examined for the certificate now required, or in the colour and form vision tests, he must here give particulars of the last occasion on which he was examined, stating when, where, and with which result. If he has not been examined for a certificate or in the colour and form vision tests, he must state so in writing across this division. A candidate not possessing a certificate of competency who has at any time failed in the colour and form vision tests, must here state when and where.

(20) Day.	(21) Month.	(22) Year.	(23) Port.	Subject in which Examined and Result.			
				(24) Colour and Form Vision Tests.	(25) Written.	(26) Oral.	(27) Signals.

E.—Certificate of Examiner.

Date and Place of Examination.		(30) Letter Test. *	(31) Lantern Test. *	(32) Written. *	(33) Oral. *	(34) Signals. *	(35) If failed in Oral state how much further Sea Service (if any) must be Performed.	(36) Remarks (e.g. certificate for which Passed, Eligibility for next Examination, etc.).
(28) Date.	(29) Place.							

*Insert "Passed", "Failed", or "Not Examined", in each column. In colour vision, if candidate already holds a certificate of competency, state "Not Examined"

F.—Personal description of candidate.

Height.		Colour of:—		(41) Race.	(42) Personal Marks or Peculiarities (if any).
(37) Feet.	(38) Inches.	(39) Eyes.	(40) Hair.		

I hereby certify that the particulars contained in Divisions E and F are correct, and that the candidate has produced satisfactory testimonials and proof of service.

At the port of _____ this _____ day of _____ 19____

Examiner.

G.—Complete list of testimonials and statement of service from first going to sea, or from date of present certificate. (Not applicable to Master of a foreign-going ship—Special Grade.)

The testimonials, which must be attached hereto, are to be numbered consecutively by the candidate and the corresponding numbers entered by him in column (43) below.

(43) No. of Testimonials (if any).	Particulars of Ship.			
	(44) Name of Ship.	(45) Steam, Motor, Other.	(46) Tonnage.	(47) Port of Registry and Official No. of Ship.

Particulars of Applicant's Service.

(48) Capacity.	(49) Date of Commence- ment.	(50) Date of Termina- tion.	Length of Service.			(54) Trade in which Employed.	(55) Remarks.	(56) Initials of Verifier.
			(51) Years.	(52) Months.	(53) Days.			
Total service.....								
Time served for which official proof is produced.....								
Time served for which no proof is produced.....								

H.—Declaration to be made by candidate.

N.B.—The candidate's attention should here be drawn to the fact that any false representation is punishable under section 315 of Act 57/1951.

I do hereby declare that the particulars contained in Divisions A, B, C, D and G of this form are correct and true to the best of my knowledge and belief; and I make this declaration conscientiously believing it to be true.

Dated at _____ this _____ day of _____ 19____

Signature of Candidate.

Declared before me at _____
and the fee of _____ (Receipt No. _____)
received this _____ day of _____ 19____

Signature and Designation of Proper Officer or
Commissioner of Oaths.

The Secretary for Transport,
Pretoria.

T.V. 5/103.

REPUBLIC OF SOUTH AFRICA.

(Coat of Arms.)

DEPARTMENT OF TRANSPORT—MARINE DIVISION.

MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.

APPLICATION FOR A CERTIFIED COPY OF A CERTIFICATE OF COMPETENCY OR QUALIFICATION OR A CERTIFICATE OF SERVICE.

No. of lost certificate.	Grade of lost certificate.

Port of _____

DIVISION A.—NAME, ETC. OF APPLICANT.

Name. (1)	Address. (2)	Date of Birth. (3)	Place of Birth. (4)

DIVISION B.—PARTICULARS OF LAST SERVICE.

Name of last ship. (5)	Port of registry and official No. of last ship. (6)	Rank or Rating on board last ship. (7)	Description of last voyage.			
			From. (8)	To. (9)	Commenced. (10)	Ended. (11)

Particulars of vessels in which applicant has served before and after the issue to him of the certificate now lost.

Name of ship. (12)	Port of registry and official No. (13)	Rank or rating on board ship. (14)	Whether in foreign-going or coasting trade or in fishing. (15)	Service.	
				Commenced. (16)	Ended. (17)

DIVISION C.—DESTINATION OF CERTIFICATE.

(To be completed by applicant)

I request that the certified copy of my certificate be delivered to me at _____

Signature of applicant.

DIVISION D.—DECLARATION TO BE MADE BY APPLICANT BEFORE THE PROPER OFFICER.

I _____ of _____
do hereby declare—

(1) that my certificate was a certificate of* _____ as _____
and that it was numbered _____

(2) that the said certificate was lost or destroyed under the following circumstances:—

† _____

(3) that the statements made herein and in Divisions A and B on the reverse side hereof are correct and true to the best of my knowledge and belief.

Signature of applicant.

DECLARED BEFORE ME AT _____
and the renewal fee of _____ (receipt No. _____) received this _____
day of _____ 19____

Signature and designation of proper officer.

The Secretary for Transport,
PRETORIA.

* Insert the word Competency, Qualification or Service and grade.

† Here state the place, date and cause of the loss of the certificate.

REPUBLIC OF SOUTH AFRICA.

(Coat of Arms.)

DEPARTMENT OF TRANSPORT.—MARINE DIVISION.

MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.

APPLICATION TO BE EXAMINED IN THE COLOUR AND FORM VISION TESTS.

Port _____

Rotation No. _____

PERSONAL PARTICULARS OF CANDIDATE.

Surname (in block letters) _____
 Christian names (in block letters) _____
 Date of birth _____ Birthplace _____ Rating _____
 Height _____ feet _____ inches. Colour of— eyes _____ hair _____ Race _____ Personal marks or
 peculiarities _____
 Address _____

PARTICULARS OF SEA SERVICE.

If candidate has served at sea, state—

Number of years and capacity in which served.		Grades of certificates of competency and dates on which granted.	
Years.	Capacity.	Grade.	Date.

If a candidate has not served at sea state—

If about to go to sea.	In what capacity.

RESULT OF ANY PREVIOUS COLOUR AND FORM VISION TESTS.

Note.—If candidate has been previously examined in the colour and form vision tests, he must state here when and where the last examination took place, and insert "Passed", "Failed", "Not examined", as the case may be, against each subject. If the candidate holds a certificate of competency, he should not be examined in the lantern test, and the entry "Not examined" should be made against the subject.

Day.	Month.	Year.	Port.	Letter test.	Lantern test.	State whether result is in respect of— (a) First failure. (b) Failed by Secretary. (c) Failed in further test.

DECLARATION TO BE MADE BY CANDIDATE.

I, the undersigned, _____
 hereby declare that the particulars contained above are correct and true to the best of my knowledge and belief; and I make this declaration conscientiously believing it to be true.

Dated at _____ this _____ day of _____ 19 _____

Signature of Candidate.

Declared before me at _____ this _____ day of _____ 19 _____

Signature of Proper Officer.

FOR OFFICIAL USE ONLY—FEES.

Amount received.	Receipt No.	Date.

RESULT OF EXAMINATION.

Note.—Insert “Passed”, “Failed”, or “Not examined”, as the case may be. In the lantern test, if the candidate holds a certificate of competency, the entry should be “Not examined”.

I, the undersigned, _____ hereby certify that the above-named candidate was examined by me on the _____ day of _____ 19____ in the letter and lantern tests with the following result:—

Letter test.	Lantern test.	New entrant test.	Remarks.

Date _____

Port _____

Signature of Examiner.

EXAMINER'S REPORT.

LETTER TEST.

Notes.—(1) Four letter sheets must be used in each examination, if the candidate fails to reach the required standard on the first sheet.

(2) In the event of failure in the lantern test, the Examiner is required to fill in the following Table showing the number of mistakes (if any) made, irrespective of whether the candidate passes or fails in the letter test.

What was the condition of the light when the candidate was examined?	State whether the candidate used both eyes together or only his better eye.	Sheets used.	Number of mistakes in each line of sheet.						
			1st line.	2nd line.	3rd line.	4th line.	5th line.	6th line.	7th line.
		First.....							
		Second.....							
		Third.....							
		Fourth.....							

LANTERN TEST.

Note.—Without special authority, holders of certificates of competency may not be examined in the lantern test.

Large apertures.				Small apertures.			
No. shown on discs.	Named by candidate.	No. or Nos. shown on discs.	Named by candidate.	No. or Nos. shown on discs.	Named by candidate.	No. or Nos. shown on discs.	Named by candidate.
Total No. of lights shown:				Total No. of lights shown:			

REPUBLIC OF SOUTH AFRICA.

T.V. 5/108.

(Coat of Arms.)

DEPARTMENT OF TRANSPORT—MARINE DIVISION.

MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.

CERTIFICATE OF WATCH-KEEPING SERVICE.

N.B.—Where service as First Watch-keeping Officer is claimed, the Master should state if the officer was next in seniority to the Master. If the ship carried only two watch-keeping officers, the Master should state this in the certificate.

This is to certify that Mr. _____
has served on the ship _____ in the capacity of *first/second/third watch-keeping officer.

During this time Mr. _____ was an officer in full/effective charge of a watch for eight hours out of every 24 hours at sea, except as stated below.

Watches were not doubled at any time during the voyage.**

Watches were doubled between the following dates and at no other times _____

During this time Mr. _____ served as the *senior/junior of two bridge-keeping officers.***

Signature of Master.

*Delete words which do not apply.

†“Effective charge of a watch” means responsibility for the watch, but it does not preclude occasional supervision by a senior officer, provided that the senior officer does not take charge of the watch at any time.

**Delete this paragraph if watches were doubled at any time during the voyage.

***Delete this paragraph if watches were not doubled at any time during the voyage.

CERTIFICATE OF SERVICE AND CONDUCT.

This is to certify that Mr. _____ has served as _____
in the ship _____ under my command from _____
to _____ during which period he has conducted himself* _____

Signature of Master.

Date

*Here the Master is to insert in his own handwriting his remarks on the conduct, ability and sobriety of the officer.

No. _____

REPUBLIC OF SOUTH AFRICA.

T.V. 5/106.

(Coat of Arms.)

No. _____

DEPARTMENT OF TRANSPORT—MARINE DIVISION.

MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.
AUTHORITY FOR DELIVERY OF A CERTIFICATE OF COMPETENCY OR QUALIFICATION.

AUTHORITY FOR DELIVERY OF A CERTIFICATE OF COMPETENCY OR QUALIFICATION.

Name of applicant _____
Rotation number _____
Grade for which passed _____
Authority given to the above candidate to obtain his certificate of *competency/qualification from the proper officer at the port of _____

Date

Examiner

(N.B.—This authority is subject to the approval of the Secretary for Transport, Pretoria.)

Name of applicant _____ Grade for which passed _____
Height: _____ Feet _____ Inches. Colour of: Eyes _____
Hair _____ Race: _____

Signature of Applicant.

Please deliver to the above-named person the certificate of *competency/qualification, when he has completed the particulars required therein, and testimonials or other documents forwarded to you on his behalf by the Secretary for Transport, Pretoria.

Port _____ Date _____ 19 _____

To _____

Signature of Examiner.

*Delete the word which does not apply.

*Delete the word which does not apply.

T.V. 5/107.

Port.....
 Name of Candidate.....
 Commencing date of last examination.....
 Reference to correspondence (if any).....
 Rotation No.....
 Written.....
 Orals.....
 Signals.....
 Date eligible for re-examination.....
 Initials of Examiner.....
 Date of Issue.....

REPUBLIC OF SOUTH AFRICA.
 (Coat of Arms.)

T.V. 5/107.

DEPARTMENT OF TRANSPORT—MARINE DIVISION.
 MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.
 RESULTS OF EXAMINATION OF MASTERS—SPECIAL GRADE, MASTERS,
 NAVIGATING OFFICERS, SKIPPERS, MATES, BOATSWAINS, MARINE
 ENGINEMEN AND ASSISTANT MARINE ENGINEMEN.

N.B.—This form should be produced by the candidate with his documents on subsequent examination.

Name of Candidate..... Rotation No.....
 Reference to correspondence (if any).....

Date.	Port.	Grade.	Examination.	Written.*	Oral.*	Signals.*
			First attempt.			
			Second attempt.....			
			Third attempt.....			

Office Stamp.

Date eligible for re-examination

Signature of Candidate.

Signature of Examiner.

*Insert "Passed", "Failed" or "Not Examined".

REPUBLIC OF SOUTH AFRICA.
 (Coat of Arms.)

T.V. 5/105.

DEPARTMENT OF TRANSPORT—MARINE DIVISION.
 MERCHANT SHIPPING ACT, 1951 (ACT NO. 57 OF 1951), AS AMENDED.
 APPLICATION FOR A CERTIFICATE OF SERVICE.
 (Section 80 of Act 57/1951, as amended.)
 A. PARTICULARS OF APPLICANT.

Surname (in block letters).	Christian names (in block letters).	Date of birth.	Place of birth.	Nationality.	Address.

I desire a certificate of service as..... and if granted, it should be forwarded to the proper officer at..... for issue to me.

B. PARTICULARS OF SEA SERVICE:

Particulars of vessel.

Name of vessel.	Steam, motor, other.	Gross tons.	Horse power of engines.	Port of Registry and official No.; or registration No. of vessel.	Trade in which engaged (state whether fishing, coasting, other)

Particulars of applicant's sea service.

Capacity.	From.	To.	Length of service.			Remarks.
			Years.	Months.	Days.	
Total sea service.....						
Time served for which evidence is now produced.....						
Time served for which no evidence is produced.....						

C. DECLARATION TO BE MADE BY APPLICANT.

I, the undersigned, _____ hereby declare—
 (1) that the particulars contained in Divisions A and B of this form are correct and true to the best of my knowledge and belief;
 and
 (2) that I have *(not) a certificate of competency or service* (which I now surrender).

Signature of applicant.

(If applicant is unable to write, he should make his mark in the space above.)

Declared before me at _____ this _____ day of _____ 19____

Signature and designation of proper officer or commissioner of oaths.

19____ The fee of _____ (receipt No. _____) received this _____ day of _____

Signature and designation of proper officer.

*Delete whatever is inapplicable.

D. CERTIFICATE OF EXAMINER.

Date and Place of colour and form vision tests.		Result.		Personal description of candidate.					
				Height.		Colour of—		Race.	Personal marks or peculiarities (if any).
Date.	Place.	Letter test.	Lantern test.	Feet.	Inches	Eyes.	Hair.		

I hereby certify that the particulars contained in Division D are to the best of my knowledge and belief correct, and in my opinion a certificate of service as _____ should be issued.

Dated at _____ this _____ day of _____ 19____

Date stamp.

TO THE SECRETARY FOR TRANSPORT,
 PRETORIA.

Signature of Examiner.

E. FOR OFFICIAL USE ONLY.

Grade and No. of certificate issued.	Date and place of issue.	Previous certificates surrendered.

COLOUR AND FORM VISION TESTS.

(See Regulation 13.)

DETAILS AS TO THE CONDUCT OF COLOUR AND FORM VISION TESTS.

(NOTE.—The purpose of these tests is to ensure that the candidate's eyesight is sufficiently good to enable him to pick up and identify correctly the lights of distant ships at sea. Experience has shown that for this purpose he must be able to reach certain minimum standards both of form and colour vision. The tests employed are two, a letter and a lantern test, details of which are given below. The letter test is a test of form vision only, and the lantern test is a test of form and colour vision combined.)

GENERAL.

1. The test shall be conducted under the strict personal supervision of the Examiner, who shall keep a record of all mistakes made by the candidate both in the letter test and in the lantern test.

2. *Spectacles not Allowed.*—During the examination in the colour and form vision tests, candidates shall not be allowed to use spectacles, contact lenses, or glasses of any kind, or any other artificial aid to vision. Candidates shall have the option of using either eye separately or both eyes together.

LETTER TEST.

3. The first test which the candidate shall be required to undergo is the letter test conducted on Snellen's principle by means of sheets of letters. Each sheet contains 7 lines, the 5th, 6th and 7th lines corresponding to standards 5/10, 5/7.5 and 5/5, respectively.

4. *Standard of Vision Required.*—Every candidate shall be required to read correctly 5 of the 6 letters in the sixth line and 4 of the 7 letters in the seventh line, at a distance of 16 feet from the eye.

5. *Method of Testing.*—Artificial illumination shall be used in preference to daylight owing to the impossibility of securing uniformity where the latter is used. Where suitable dark rooms are available the test sheets shall be hung on a wall at a height of 5 or 6 feet from the floor, with two electric bulbs each of 40 watts placed horizontally and suitably screened so that the light falls directly on two lines of letters on the sheet. Equivalent fluorescent lighting may be used.

The test room shall be moderately illuminated and care taken that there are no glaring lights or bright objects in the candidate's field of vision. Extreme contrast between the illuminated test card and the background shall be avoided.

If a suitable dark room is not available the test sheets shall be hung on a wall at the required height in a good light, but not in direct sunlight.

When the candidate has taken up the correct position one of the sheets shall be exposed, and he shall be asked to read the letters on the sheet from left to right, beginning at the top and going downwards.

If at the conclusion of the test the candidate is found to reach the required standard, he shall be considered as having passed and may then proceed to the lantern test unless he holds a certificate of competency as master, navigating officer, skipper, mate or boatswain, in which case the lantern test need not be taken.

6. Failure.—

- (a) If a candidate fails to reach the standard required on the first sheet, he shall be tested with at least four sheets and the following alternatives explained to him:—
 - (i) He may break off the examination and present himself for re-examination in not less than 3 months in which case a certificate of failure shall be issued to him; or
 - (ii) he may proceed to the lantern test.
- (b) Whenever a candidate fails to pass the letter test he shall be advised to consult an ophthalmologist with a view to ascertaining the nature of the defect in his form vision, and whether it is curable.

LANTERN TEST.

7. *Apparatus.*—A special lantern and a mirror are provided for this test. The test shall be conducted in a room so darkened as to exclude all light. The lantern shall be placed directly in front of the mirror, so that the front part of the lantern is exactly 10 feet from the mirror, and in such a position that the lights reflected in the mirror show clearly when viewed by the candidate on the left of the lantern.

8. *Darkness Adaption.*—If the candidate makes a mistake at the beginning of the lantern test he shall be kept in a completely or partially darkened room for at least a quarter of an hour and shall then begin the test again.

9. *Method of Testing.*—The lantern supplied for the examination is so constructed as to allow one large or two small lights to be visible, and is fitted with twelve glasses of three colours—red, white and green. At the beginning of the examination the candidate shall be shown a series of lights through the large aperture, and he shall be required to name the colours as they appear. In showing the white light it shall be emphasised that this light is not a pure white. If a candidate makes a mistake in calling this light “red” a proper red light shall be shown immediately after and his attention directed to the difference between the two.

After a series of lights through the large aperture has been shown, two complete circuits and one broken circuit with the two small apertures shall be made, the candidate naming the colours of each set of two lights from left to right.

10. Passing or Failure.—

- (a) If a candidate does not make any mistake in the lantern test after passing the letter test he shall be deemed to have passed the whole examination and the Examiner shall issue a certificate to that effect.
- (b) If, with either the large aperture or the two smaller apertures of the lantern, a candidate mistakes red for green or green for red he shall be considered to have failed in the lantern test.
- (c) If a candidate makes any other mistake with the lantern, i.e. if he calls white “red” or red “white” or confuses green and white, his case may be referred to the Secretary.
- (d) A candidate shall be notified by the Examiner of his success or failure or else that his case has been referred to the Secretary, and in that event he shall be told that the decision as to whether he has passed or failed, or must undergo a further examination, will be communicated to him in due course. Pending the receipt of the Secretary's instructions in a case referred to him, a candidate for a certificate of competency shall only be allowed to proceed with such examination on the express understanding that the latter examination will be cancelled in the event of failure at the colour and form vision tests.

11. *Cases Referred to Secretary.*—Whenever a case has been referred to the Secretary, he shall decide whether the candidate has passed or has failed or must undergo a further test. If the Secretary decides that the candidate must undergo a further test, the candidate shall be informed of the date, time and place of the further examination. No additional fee shall be charged for such examination. Every such examination shall be conducted by an examiner other than the examiner who conducted the first test. The examiner shall decide that the candidate has passed or that he has failed the test.

APPEALS.

12. Whenever—

- (a) the candidate has failed to pass the first lantern test; or
- (b) the Secretary has decided in a case referred to him that the candidate has failed to pass the first lantern test; or
- (c) the candidate whose case has been referred to the Secretary has failed to pass the further lantern test decided upon by the Secretary;

the candidate may appeal in writing to the Secretary, and thereupon he shall, upon payment of a fee of R4.20, which shall be refunded to him if he passed, be allowed to undergo a further special test.

The further special test shall, whenever possible, be conducted by an examiner other than an examiner who conducted one of the earlier tests, who may be advised by an ophthalmic surgeon appointed by the Secretary. The candidate may request the presence at the expense of the candidate of a relative or friend or of an ophthalmic surgeon to be named by him, for the purpose of witnessing the examination.

ANNEX 3.

SYLLABUSES FOR EXAMINATIONS.

(See regulation 72.)

I. NAVIGATING OFFICER OF A COASTING SHIP OF 100 OR MORE GROSS REGISTER TONS.

(1) Paper 1. (Written.)

PRACTICAL NAVIGATION.

(3 hours.)

- (a) To find the True bearing of the Sun and the deviation of the compass for the direction of the ship's head.
- (b) To find the latitude by meridian altitude of the Sun.
- (c) From an observation of the Sun near the meridian to find the position line and the latitude through which it passes corresponding to a given longitude.
- (d) To determine the position line and a position through which it passes from an observation of the Sun out of the meridian.

(2) Paper 2. (Written.)

CHART WORK AND PILOTAGE.

(2 hours.)

(a) Given the Variation and a Table of Deviations to convert true Courses into Magnetic and Compass Courses and vice versa. To find the compass course and distance between two positions. The effect of current on speed. Allowance for leeway. To find the compass course to steer allowing for a current. Given compass course steered, the speed of the ship and the direction and rate of the current to find the true course made good.

(b) To fix the ship's position on a chart by simultaneous cross bearings, bearing and range or by wireless cross bearings, applying the necessary corrections. To fix the ship's position by bearings of one or more objects with the run between, allowing for a current and to find the distance at which the ship will pass a given point. The construction of a line of soundings. The use of a single position line approaching the coast.

(c) The use of clearing marks and horizontal and vertical danger angles.

(d) To find the time and height of high and low water at a Standard Port (Admiralty Tide Tables). The use of tables or diagram to find the height of tide at any given time and thence the approximate correction to soundings or to the charted heights of shore objects.

(e) Candidates will be examined orally on the information given on a chart or plan, particularly about buoys, lights, depths and nature of bottom, contour lines, tides and tidal streams. Recognition of the coast. The intelligent use of Sailing Directions. Chart correction.

(3) Paper 3 (Written.)

ELEMENTARY SHIP KNOWLEDGE.

(2 hours.)

- (a) Elementary ideas on ship construction. The candidate will be expected to show his practical acquaintance with framing, shell plating, decks, watertight bulkhead, sounding pipes and air pipes.
- (b) The meaning of the terms Displacement and Deadweight. Use of Displacement and Tons Per Inch scales to determine weights of cargo, etc., from draughts. Effect of density of water on draught. Fresh Water Allowance.
- (c) A general understanding of Centre of Gravity and Centre of Buoyancy and the effect of adding or removing weights. The danger of slack ballast tanks.
- (d) A knowledge of the regulations made under section 356 (1) (xxxii) of Act 57/1951.

(4) PAPER 4. (Written.)

ESSAY IN ONE OF THE OFFICIAL LANGUAGES.

(1½ hours.)

This paper will be designed to test the candidate's ability to write one of the official languages of the Republic clearly and grammatically with due attention to spelling, legibility and neatness. It will in no sense be a test of technical knowledge.

(5) ORAL.

1. (a) A full knowledge of the content and application of the regulations for preventing collisions at sea. (Candidates will not be placed in the position of handling a sailing ship, but will be expected to recognise a sailing ship's lights and to have a knowledge of her possible manoeuvres according to the direction of the wind.)
- (b) Distress and pilot signals; penalties for misuse.
- (c) Wreck marking system.
- (d) The use of the rocket apparatus.
- (e) A knowledge of the contents of the Merchant Shipping Notices published by the Department of Transport and the use of Admiralty and South African Notices to Mariners.
2. (a) Marking of ordinary lead line and taking a cast.
- (b) The use and upkeep of sounding appliances and logs.
- (c) Use and care of engine room telegraphs.
- (d) Coming to anchor, the use of two anchors. Mooring to buoys. Coming alongside and leaving a wharf. Entering and leaving a dock.
- (e) Keeping an anchor watch. Dragging anchor.
- (f) Care, maintenance and use of the live-saving appliances and fire appliances carried by a coasting ship.
- (g) Management of boats under oars or sail and in heavy weather. Beaching or landing. Coming alongside.
3. The strength of ropes, including wire ropes. Power gained by purchases.
4. An elementary knowledge of cargo work, as given in the syllabus for Chief Navigating Officer [Paper 5 section (g)].
5. (a) To read and understand a barometer, thermometer and a hydrometer.
- (b) To use a sextant for taking vertical and horizontal angles and to find the index error.

(6) SIGNALS.

To send and receive signals in:—

- (a) Semaphore up to eight words per minute.
- (b) Morse Code by flash lamp up to six word per minute.
- (c) International Code of Signals.

II. MASTER OF A COASTING SHIP OF 100 OR MORE GROSS REGISTER TONS.

(1) PAPER 1. (Written.)

CHART WORK AND PILOTAGE.

(2 hours.)

In addition to the syllabus for Navigating Officer of a coasting ship of 100 or more gross register tons, questions on the following may be asked either in the written or oral parts of this paper.

- (a) Distance of sighting lights. Distance of a point of land of known height.
- (b) The use of bearings obtained by ship's Radio Direction Finder. The use of Wireless Beacons.
- (c) Candidates will be examined orally on the selection of suitable points for bearings, approaching an anchorage and entering narrow waters. The reliability of charts.

(2) PAPER 2. (Written.)

PRACTICAL NAVIGATION.

(2 hours.)

This paper may include questions in the syllabus for Navigating Officer of a coasting ship of 100 or more gross register tons.

- (a) To find the true bearing of any heavenly body and the deviation for the direction of the ship's head.
- (b) To find the approximate time (to the nearest minute) of the meridian passage of a star. To find the latitude by meridian altitude of a star.
- (c) From an observation of a star near the meridian to find the position line and the latitude through which it passes corresponding to a given longitude.
- (d) To determine the position line and a position through which it passes from an observation of a star out of the meridian.
- (e) Recognition of stars of the First Magnitude by reference to the principal constellations.

(3) PAPER 3. (Written.)

STABILITY AND SEAWORTHINESS.

(2 hours.)

- (a) The meaning of Metacentre, Metacentric Height, Initial Stability, Righting Lever, Centre of Flotation, Moment to Change Trim.
- (b) Determination of the Centre of Gravity of a ship in a new condition, the Centre of Gravity in the old condition being given. The effect on the position of the Centre of Gravity of adding, removing or shifting weights. Stiff and tender ships. Effect of a shift of cargo or solid ballast. Cargoes liable to shift and precautions to be taken. Deck cargoes. Ballasting. The danger of "free surface" of liquids (without proof or calculations).
- (c) The use of Stability Curves and the data supplied to a ship.
- (d) Simple trim problems.
- (e) Damage affecting seaworthiness. Temporary repairs at sea or in port. Certificates of Seaworthiness.

(4) PAPER 4. (Written.)

COMPASS DEVIATION.

(1½ hours.)

- (a) A simple knowledge of the meaning of hard and soft iron. Simple ideas of the effect of hard iron, vertical soft iron and horizontal soft iron on the deviations of the compass. The means used to compensate for these effects with special reference to coasting ships.
- (b) Care and maintenance of magnetic compasses. Siting of compasses with particular reference to the proximity of magnetic material and electrical appliances.
- (c) To find the Magnetic Bearing of a distant object from compass bearings taken on equidistant points and to construct a table of deviations.

(5) PAPER 5. (Written.)

CARGO WORK.

(2 hours.)

- (a) A knowledge of the requirements of the loading, unloading and coaling appliance regulations for the time being in force.
- (b) Simple calculations of stresses in spans, derricks, topping lifts, etc. Strength of ropes, wire ropes and chains. Purchases and power gained.
- (c) Use and maintenance of cargo working gear and the organization of cargo work.
- (d) The principles of cargo stowage and handling, including bulk cargoes.

(6) ORAL.

1. Regulations for preventing collisions at sea, etc., as set forth in paragraph 1 (a) of the syllabus for the oral examination of Navigating Officer of a coasting ship of 100 or more gross register tons.
2. (a) Handling a ship in bad weather and when it is disabled.
- (b) Preservation of crew and passengers in the event of wreck. Abandoning a wrecked ship. Rockets and rocket apparatus. Communications with the shore.
- (c) Assisting a vessel in distress. Rescuing the crew of a disabled ship.
- (d) Effect of screws on the steering of a ship. Manoeuvring a ship in rivers and harbours.
3. (a) General knowledge of the requirements of Act 57/1951 and regulations relating to strandings, collisions or other casualties, reports to be made out in cases of death or injury, return of crew list, agreements and certificates of discharge.
- (b) A shipmaster's knowledge of the law relating to load line marks and entries and reports to be made respecting them.
- (c) Entering and clearing a coasting ship.
4. Meteorology sufficient to understand the meaning of weather bulletins for shipping (Coastal Areas). Visual and broadcast storm warnings.
5. The use of RADAR as an aid to navigation.

(7) PAPER 7.

SIGNALS.

1. To send and receive signals in:—

- (a) Semaphore up to eight words per minute.
- (b) Morse code by flash lamp up to six words per minute.
- (c) International Code of Signals.

2. The practical use of shipborne Radio D/F.

III. SECOND NAVIGATING OFFICER OF A FOREIGN-GOING SHIP.

Candidates should demonstrate their understanding of their work by means of sketches drawn with reasonable accuracy. Answers to problems in practical navigation should, where appropriate, be accompanied by a figure drawn reasonably to scale.

In the paper on practical navigation, total correction of altitudes by means of tables may be used. In the paper on "Principles of Navigation" each correction must be shown separately.

The "Principles of Navigation" and "Mathematics" papers are intended to test the candidate's grasp of fundamental technical ideas and processes required in his work at sea. Mathematical proofs of formulae are not required.

(1) PAPER 1. (Written.)

GENERAL SHIP KNOWLEDGE.

(3 hours.)

- (a) The names of the principal parts of a ship. General idea on ship construction. The candidate will be expected to show his practical acquaintance with longitudinal and transverse framing, beams and beam knees, watertight bulkheads, hatchways, rudders and steering gear, shell plating, double bottoms and bilges, stern frame, propeller and propeller shaft, stern tube, sounding pipes, air pipes and general pumping arrangements. The stiffening and strengthening to resist panting and pounding. Cause and prevention of corrosion in a ship's structure.
- (b) The meaning of the terms block coefficient, displacement and deadweight. Use of displacement and tons per inch scales to determine weight of cargo, etc., from draughts. Effect of density of water on draught. Fresh water allowance. The laws of floating bodies. The meaning of the terms buoyancy and reserve buoyancy. General understanding of centre of gravity and centre of buoyancy and the effect of adding or removing weights. Metacentric height. The danger of slack ballast.
- (c) Rigging a ship for loading and discharging cargo and the use of derricks and winches. The stowage and dunnaging of cargoes including bulk cargoes. Protection against damage by sweat. Bulk oil cargoes. Calculations of capacities taken up by part cargoes and of space remaining. Conversion of weight measurement of cargo into space measurement and vice versa. Elementary ideas on the making and use of cargo plans. Ventilation systems of holds and tanks.
- (d) The names and functions of various parts of a ship's lifeboat. The types of construction. Capacity, buoyancy and number of persons. Care and maintenance of lifeboat equipment, lifebuoys, lifejackets, line throwing appliances, lights and sound signals.

(2) PAPER 2. (Written.)

CHARTWORK AND PILOTAGE.

(2 hours.)

- (a) Given the variation and a table of deviations to convert true courses into magnetic and compass courses and vice versa. To find the compass course and distance between two positions. The effect of current on speed. Allowance for leeway. Given compass course steered, the speed of the ship and the direction and rate of the current to find the true course made good. To find the course to steer allowing for a current.
- (b) To fix the ship's position on a chart by simultaneous cross bearings, bearing and range, or by wireless cross bearings applying the necessary corrections. To fix the ship's position by bearings of one or more objects with the run between, allowing for a current and to find the distance at which the ship will pass a given point. To fix the ship's position by horizontal sextant angles.
- (c) The use of clearing marks and horizontal and vertical danger angles.
- (d) To find the time and height of high and low water at a Standard Port (Admiralty Tide Tables). The use of tables or diagram to find the height of tide at any given time and thence the approximate correction to be applied to soundings or to charted heights of shore objects.
- (e) Candidates will be examined orally on the information given on a chart or plan, particularly about buoys, lights, depths and nature of bottom, contour lines, tides and tidal streams. Recognition of the coast. The intelligent use of Sailing Directions. Chart correction.

(3) PAPER 3. (Written.)

PRACTICAL NAVIGATION.

(3 hours.)

- (a) Practical problems on Plane, Parallel and Mercator sailing.
- (b) The use of the Traverse Tables to obtain the position of the ship at any time given compass courses and errors and the run recorded by log or calculated by time and estimated speed, allowing for the effects of wind and current, if any.
- (c) To find the latitude by Meridian Altitude of the Sun or a Star. Latitude by an observation of Polaris.
- (d) From an observation of the Sun or Star near the meridian to find the position line and the latitude through which it passes corresponding to a given longitude.
- (e) To determine the position line and a position through which it passes from an observation of the Sun or a Star out of the Meridian.
- (f) To find the ship's position at the time of the second observation by the use of position lines obtained from two different observations and thence the noon position required.
- (g) To find the True Bearing of a heavenly body and the deviation of the compass for the direction of ship's head.

(4) PAPER 4. (Written.)

MATHEMATICS.

(2 hours.)

- (a) *Algebra*.—Addition, Subtraction, Multiplication, Division, Law of indices, Insertion and removal of brackets. Simple equations—problems. Development of Formulae, transposition and evaluation. Simultaneous equations of the first order involving two unknowns—problems. Simple Factors, Fractions. The solution of the Quadratic Equation. Graphs. Axes of reference. Co-ordinates. Construction and reading of graphical diagrams, e.g. weather statistics and displacement curves. Problems on graphs. The ideas of ratio, proportion and variation and the application to simple problems.
- (b) *Common Logarithms*.—The practical use of logarithms to base 10; their use in simple calculations involving multiplication, division, simple powers and roots.
- (c) *Mensuration*.—Areas and perimeters of rectangle; triangle and circle. Volumes and surface areas of box-shaped bodies, cylinders, wedges and spheres. Practical applications, e.g. weight of general cargo of various shapes; volumes of holds, bunkers and tanks; weight of contents.
- (d) *Practical Geometry*.—The construction of plane triangles. Congruence of triangles. The right-angled triangle. Exterior angle equal to the sum of the interior opposite angles. Sum of angles in a triangle. Similar triangles and ratio of corresponding sides. Parallel lines and transversal. Properties of circles, chords and tangents. Angle in a semi-circle; angles subtended by any chord of a circle. Forces, resultant forces and their components. The vector diagram.
- (e) *Trigonometry*.—Measurement of angles. Circular measure. Trigonometrical ratios up to one complete revolution. Haversine, Simple relationship between ratios. Complementary and supplementary angles and their ratios. Simple Identities. Solution of right-angled and oblique-angled triangles including practical problems based thereon. The use of the Traverse Tables for solution of right-angled triangles. Elementary properties of spherical triangles. Solution of spherical triangles (given three sides or two sides and the included angle). Solution of right-angled and quadrantal spherical triangles.

(5) PAPER 5. (Written.)

PRINCIPLES OF NAVIGATION.

(2 hours.)

In this paper candidates may be asked to draw a figure reasonably to scale and to state the projection used. Candidates will be required to have a general understanding of the following:—

- (a) The shape of the Earth. Poles. Equator. Meridians. Parallels of Latitude. The position of a place fixed by its latitude and longitude. Direction, bearing, distance, units of measurement. Difference of latitude, difference of longitude, departure, middle latitude and meridional difference of latitude and the relationships between them. Great and small circles on a sphere. Shortest distance on the surface of a sphere between two points.
- (b) The celestial sphere, celestial poles, celestial meridian above and below poles, celestial equator, celestial horizon zenith, prime vertical, circles of altitude.
- (c) Solar system. The movement of the Earth and other heavenly bodies. Mean Sun. Ecliptic. First Point of Aries. Declination. Sidereal Hour Angle. Azimuth. Rising and setting of heavenly bodies. Length of day and night. Twilight. The position of a heavenly body on the celestial sphere both with and without reference to the observer, i.e. Azimuth with Altitude or Declination with Sidereal Hour Angle or Local Hour Angle. Recognition of stars of the First Magnitude by reference to the Principle Constellations.
- (d) Time, Greenwich and other Standard times. Mean time. Apparent time. Sidereal time. Equation of time. Relationship between longitude and time.
- (e) Hour Angle of a heavenly body in time and in arc. Greenwich Hour Angle of Sun, Moon, Planets and Aries. Sidereal Hour Angle of a star.
- (f) Correction of Sextant Altitudes. Dip, Refraction, Horizontal Parallax, Parallax in Altitude, Semi Diameter and augmentation.
- (g) Geographical position of a heavenly body. A circle of position on the earth and its practical application, i.e. position line. Intercept.
- (h) Magnetic Meridian. Variation and Deviation.
- (i) The simple properties of a Mercator Chart. Longitude and Latitude scales. The measurement of distance. Rhumb Lines. Meridional Parts.
- (j) Chronometers. Management and care, winding, rating and comparing.

(6) PAPER 6. (Written.)

LANGUAGE.

(1½ hours.)

The paper will be designed to test the candidate's ability to write one of the official languages of the Republic clearly and grammatically with due attention to spelling, legibility and neatness. It will be in no sense a test of technical knowledge. This paper may consist of an essay, aprecis or an exercise in letter writing.

ORAL AND PRACTICAL.

1. (a) Rigging of ships. Strength of ropes including wire ropes. Rigging purchases of various kinds and knowledge of power gained by purchases. Knotting and splicing with strict reference to current practice. Seizings, rackings, chain stoppers, etc.
- (b) Sending topmasts up and down.
- (c) Bending, setting and taking in lifeboat sails. Management of boats under oars or sail and in heavy weather. Beaching or landing. Coming alongside.
- (d) Helm Orders. Conning the ship. Effects of propellers on the steering of a ship. Stopping, going astern and manoeuvring. Turning a steamship short round. Emergency manoeuvres. Man overboard.
2. (a) Marking and use of ordinary lead line.
- (b) Use and upkeep of mechanical logs and sounding appliances.
- (c) Use and upkeep of engine room and other telegraphs.
- (d) Rocket and line-throwing apparatus.
3. (a) Anchors and cables and their use and stowage. Bringing a ship to a single anchor in an emergency.
- (b) Knowledge of use and maintenance of deck appliances and steering gear.
- (c) The use of life-saving appliances.
- (d) The use of Fire Appliances including the Smoke Helmet.

4. (a) Preparations for getting under way. Duties prior to proceeding to sea, making harbour, entering a dock. Coming alongside and securing to a buoy, with special reference to the after end of a ship.
 - (b) Keeping an anchor watch. Dragging anchor.
 - (c) Duties of officer of the watch. Use of compass to ascertain risk of collision.
 5. (a) A full knowledge of the content and application of the regulations for preventing collisions at sea. (Candidates will not be placed in the position of handling a sailing ship, but will be expected to recognise a sailing ship's lights and to have a knowledge of her possible manoeuvres according to the direction of the wind.)
 - (b) Distress and pilot signals; penalties for misuse.
 - (c) Wreck marking system.
 - (d) A knowledge of the contents of Merchant Shipping Notices published by the Department of Transport and the use of Admiralty and South African Notices to Mariners.
 6. (a) To read and understand a barometer, thermometer, hydrometer and hygrometer. (The instruments supplied by the Meteorological Office will be taken as standard.)
 - (b) To use an azimuth mirror, pelorus (bearing plate) or other instrument for taking bearings.
 - (c) To use a sextant for taking vertical and horizontal angles; to read a sextant both on and off the arc.
 - (d) To correct a sextant into which has been introduced one or more of perpendicularity, side or index errors.
 - (e) To find the index error of a sextant.
 - (f) To check chronometers by signal made by buzzer or other method; to compare two chronometers.
 7. The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate.
- Signals—To send and receive signals in:—
- (a) Semaphore up to eight words per minute.
 - (b) Morse Code by flash lamp up to six words per minute.
 - (c) International Code of Signals.

IV. CHIEF NAVIGATING OFFICER OF A FOREIGN-GOING SHIP.

(1) PAPER 1. (Written.)

PRACTICAL NAVIGATION.

(3 hours.)

This paper may include questions on the syllabus for Second Navigating Officer.

The term "heavenly body" includes Moon and Planets.

- (a) To calculate the approximate time (to the nearest minute), of the meridian passage of a heavenly body, to calculate an approximate altitude for setting the sextant to obtain the meridian altitude of a heavenly body. To find the latitude by the meridian altitude of a heavenly body.
- (b) To find the direction of the position line and a position through which it passes from an observation of a heavenly body near or out of the meridian.
- (c) To obtain the ship's position by the combination of any two observations with or without run.
- (d) To calculate the initial course and the distance on a Great Circle or Composite Great Circle track between two positions and to determine one or more positions on the track.

(2) PAPER 2. (Written.)

CHART WORK AND PILOTAGE.

(2 hours.)

In addition to the syllabus for Second Navigating Officer, questions on the following may be asked either in the written or oral parts of this paper:—

- (a) Distance of sighting lights, distance from a point of land of known height.
- (b) Construction and use of a line of soundings. The use of a single position line in approaching the coast. The use of wireless beacons.
- (c) To find the times and heights of high and low water at a Secondary Port (Admiralty Tide Tables).
- (d) Candidates will be examined orally on the reliability of charts. Selection of suitable points for bearings. Approaching an anchorage and entering narrow waters. Landfalls in thick and clear weather.
- (e) The candidate may be examined orally or practically on the use of a Gnomonic Chart and the transfer of a Great Circle or Composite track from such a chart to a Mercator Chart and on the use of Lattice Charts.

(3) PAPER 3. (Written.)

SHIP CONSTRUCTION AND STABILITY.

(3 hours.)

- (a) A general knowledge of the principal structural members of a ship. The proper names of the various parts. Midship sections of single deck, tween deck and shelter deck ships and bulk-oil carriers. Functions, construction and stiffening of watertight bulkheads, including collision bulkhead. Stern frame and stem and how secured.
- Rudders and the methods of attachment. Construction, stiffening and closing arrangements of hatchways. Hawsepipes and how secured. Rivets and riveting. Testing a line of rivets. Testing of tanks and other watertight work. Types of welding, advantages and disadvantages of each, methods used to counteract distortion, and defects commonly found in welds.
- (b) Stresses and strains in ships in a seaway or due to loading and ballasting. A knowledge of those parts of a ship specially strengthened to withstand such stresses, or where damage by excessive corrosion is liable to occur.
- (c) Ability to set out in a clear manner a report on damage sustained during a voyage.
- (d) Buoyancy and Reserve Buoyancy. The righting couple when a ship is inclined by external force. Transverse and longitudinal Metacentres. Metacentric Height. Initial Stability and its limitation to small angles of inclination. The computation of areas by Simpson's First and Second Rules and the Five-eighth Rule.
- (e) Determination of Centre of Gravity of a ship in a new condition, the Centre of Gravity in the old condition being given. The effect on the position of the Centre of Gravity of adding, removing or shifting weight. Stiff and tender ships.
- Change of stability during a voyage. Effect of a shift of cargo or solid ballast.
- The danger of "free surface" of liquids (without proofs or calculations).
- (f) Change of trim (M.C.T. 1" and C.F. given).
- (g) Use of stability curves and data supplied to a ship.

(4) PAPER 4. (Written.)

METEOROLOGY.

(2 hours.)

- (a) The principles of the barometer, Mercurial and Aneroid, Marine Mercurial barometer. How to read and reduce the readings to standard datum. The use of the Gold slide, Barograph.
- (b) The principles of the thermometer and hygrometer and their uses at sea.
- (c) The principle and use of a hydrometer.
- (d) A knowledge of the distribution of mean pressure and the prevailing winds and current systems of the globe. Relationship between pressure distribution and wind. Buys Ballot's Law.

- (e) The characteristics of, and weather associated with, the principal pressure systems, e.g. anticyclones and depressions. Permanent and semi-permanent anticyclones and depressions and their effects, e.g. Trades; Monsoons.
- (f) Tropical revolving storms, their localities, seasons and tracks. Rules for avoiding tropical storms. Use of barometric observations at a single station in conjunction with weather signs.
- (g) Water vapour in the atmosphere, evaporation, condensation, precipitation, meaning of saturation, relative humidity, formation of clouds, fog and mist.
- (h) Anabatic and Katabatic Winds. Land and Sea Breezes.
- (i) The Beaufort wind scale and weather notation in use at sea. Methods of estimating direction and force of wind at sea.
- (j) A knowledge of the types of weather messages adopted by the International Meteorological Organisation which are available to shipping. Coding and decoding messages contained in Parts V and VI of Weather Messages for shipping.

(5) PAPER 5. (Written.)

SHIP MAINTENANCE, ROUTINE AND CARGO WORK.

(3 hours.)

- (a) Keeping a ship's log (Deck log.)
- (b) Organization of crew for routine, maintenance and emergency duties.
- (c) Inspection and maintenance of the ship and her equipment e.g. bulkheads, double bottoms, deep tanks, bilges, pipelines, strums, rudder, anchors and cables and steering gear. Drainage of holds and tanks. Drydocking routine.
- (d) Properties and uses of paints and other protective covering. Sealing and painting. Treatment of woodwork. Cement work.
- (e) Indents and stores. Repair lists.
- (f) Simple calculations of stresses in spans, derricks, topping lifts, etc. Strength of ropes, wire ropes and chains. Various types of ropes, wire ropes, slings and their uses. Purchases and power gained.
- (g) Use and maintenance of cargo working gear and the organisation of cargo work. A knowledge of the regulations made under section 356 (1) (xxxii) of Act 57/1951. General principles of cargo stowage and handling, e.g. dunnaging, ventilation and slinging. The carriage of special cargoes such as Refrigerated Cargoes, Steel Rails, Liquids in bulk, Deck Cargoes and Timber Deck Cargoes, bulk stowage. The use of shifting boards. Separation. Precautions to be taken with solid ballast. Ventilation of different types of cargoes. Sweat—its cause and prevention.
- (h) Given a cargo list, to stow a hold or holds, making a rough stowage plan, having regard to stability, behaviour of vessel in a seaway, damage and contamination of cargo and accessibility at optional ports of discharge.

(6) PAPER 6. (Written.)

ELEMENTARY MAGNETISM, ELECTRICITY AND THE GYRO COMPASS.

(2 hours.)

1. Magnetism.—

- (a) A simple magnet. Poles of a magnet. The law of attraction and repulsion. The molecular theory of magnetism as applied to ferromagnetic materials. The conception of magnetically "hard" and "soft" iron. The shape of the magnetic field round a magnet. The meaning of the terms Intensity of Magnetisation, Magnetic Susceptibility and Permeability. (No mathematical formulae will be required.)
- (b) The earth's magnetic field. The Earth's magnetic poles. Magnetic equator. The Earth's total magnetic force. Angle of dip. Horizontal and vertical components. Magnetic variation. (No mathematical formulae will be required.)
- (c) The effect of constraining a compass needle to the horizontal plane, the effect of introducing a disturbing force into the vicinity of a compass needle.
- (d) The care and maintenance of different types of ship's compasses.

2. Electricity.—

- (a) A simple conception of the Electronic Theory. Current, difference of potential, resistance and their units. Ohms' Law. Effect of an electric current (i) Heating effect. Power. The electric unit; (ii) Chemical effect. Simple cells, primary and secondary; (iii) Magnetic effect. Field due to a current. Field of a current carrying solenoid and the effect of introduction of ferro-magnetic material into such a field. Magnetostriction.
- (b) The Electric motor. Measuring instruments—moving coil and moving iron. Electro-magnetic induction. Movement of a conductor in a field. Variation in magnitude of a field. Effect of make and break of a current. Induction coil. Unit of inductance. Dynamo principle—simple commutator.
- (c) Electro-static field. Unit of capacity. Condenser or Capacitor.
- (d) Fuses, switches, and simple ship's circuits. Use of measuring instruments. How to measure current and voltage.
- (e) Principal symbols used in diagrams.

3. Gyro-Compass.—

A simple non-mathematical treatment of the following:—

The principle of the Free gyroscope. The effect of the earth's rotation. Tilt and drift. Precession. Gravity control. Damping.

(7) ORAL.

1. (a) Shifting large spars and rigging sheers.
- (b) The handling of heavy weights with special reference to strength of gear used.
- (c) Use and care of all deck and above deck appliances and fittings—winches, capstans, windlasses, emergency steering gear, and fittings used between anchor and cable locker. Hoisting in boats.
2. Anchors—different kinds; advantages and disadvantages of each. Cables and their care. Preparations for anchoring. Operation of anchoring with single anchor and use of second anchor. Clearing a foul anchor. Mooring. Clearing a foul hawse. Anchoring in a tideway and in a confined space. Slipping a cable. To carry out an anchor with boats. Getting under way.
3. (a) Coming alongside of a wharf, etc. Manoeuvring in rivers and harbours. Effects of current, wind, shallows and draught on manoeuvring.
- (b) Management of steamships in stormy weather. Means to employ to keep a vessel, disabled or unmanageable, out of the trough of the sea and lessen her lee drift.
- (c) To take a cast of a deep sea lead.
4. (a) An outline knowledge of the regulations concerning Lifesaving Appliances.
- (b) Accidents, e.g. collision, running aground, accidents to hatches, leaks, fires and their treatment. Running repairs. Handling a disabled ship.
- (c) A practical knowledge of the screening of ship's navigation lights.
- (d) Preparations for drydocking and undocking. Use of shores, bilge blocks and bilge shores.
- (e) A knowledge of the restrictions (if any) upon the discharge of oil or oily water into the sea.
5. Regulations for preventing collisions at sea, etc., as set forth in paragraph 5 (a) of the syllabus for the oral and practical examination of Second Navigating Officer.
6. The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary, on account of weakness shown by the candidate.

(8) SIGNALS.

1. To send and receive signals in:—
- (a) Semaphore up to eight words per minute.
- (b) Morse Code by flash lamp to six words per minute.
- (c) International Code of Signals.
2. The practical use of shipborne Radio D/F.

V. MASTER OF A FOREIGN-GOING SHIP.

(1) PAPER 1. (Written.)

PRACTICAL NAVIGATION.

(3 hours.)

- (a) A short recapitulation paper in Navigation on the syllabus for Second Navigating Officer and Chief Navigating Officer which may include chart work and pilotage.
- (b) The Admiralty Method of Tidal Predictions and the use of Harmonic Constants. (Admiralty Tide Tables.)

(2) PAPER 2. (Written.)

MAGNETIC AND GYRO COMPASS.

(3 hours.)

A more detailed knowledge of the elementary principles of Magnetism than is required for Chief Navigating Officer.

- (a) The inverse square law, simple problems involving unit poles. The field strength, magnetic moment of a magnet, the period of a suspended magnet vibrating in the earth's field.
- (b) Magnetic Compass. The method of determination and compensation by means of components of the effects of the ship's magnetic field on the magnetic compass. The Approximate Coefficients A, B, C, D and E and their use. Conditions which might produce Coefficients A and E. Constants Lambda and Mu. The Ship's Multiplier. Methods of obtaining a table of deviations. Analysis of a table of deviations to obtain Approximate Coefficients. To determine the deviation caused by the ship's permanent magnetism and/or induced magnetism in vertical soft iron by means of observations taken in two widely separated Magnetic Latitudes.
- (c) General principles of Compass Correction and the method of correction for Coefficients B, C and D.

The cause and effect of retentive magnetism and Gaussin error.

Siting of compasses with particular reference to the proximity of magnetic material and electrical appliances. Heeling Error, its cause, effects and the method of correction. Effects of heeling error magnets on soft iron correctors.

- (d) Gyro Compass. A fuller knowledge of the theory than that required for Chief Navigating Officer, but mathematical proofs will not be required.

To include in addition to the above: Course and speed error. Correction for latitude. Ballistic deflection and its relation to Course and Speed Error. Rolling Error and how it is minimised.

The principal parts of a gyro compass and the repeating system. The more important fundamental differences in the construction of the better known types of gyro compasses and the methods used to eliminate or allow for the principal errors.

(3) PAPER 3. (Written.)

SHIP CONSTRUCTION AND STABILITY.

(3 hours.)

- (a) A fuller knowledge of ship construction than is required for lower grades of certificates. The Scribe Board and its uses. Bending Slab and methods of bending. General structure. Keels, framing, stem, stern frame and rudder post, transverse and longitudinal girders, centre through plates, keelsons and intercostals, double bottoms, side stringers, shell plating, bulkheads, deep tanks, pillars, propeller brackets, rudders. Superstructures. Masts and derricks.
- (b) Types of Vessels, e.g. General traders and bulk oil carriers. Strength and construction in relation to their trade.
- (c) Classification of ships. Surveys. General ideas of tonnage measurement. Freeboard and a general outline of conditions of assignment.

- (d) Immediate treatment of accident damage—collision, bad weather, stranding. General ideas on welding in ship repair work. Drawing up of simple specifications. The direction of simple repairs.
- (e) A fuller knowledge of Stability than is required for Chief Navigating Officer. Simple calculations involving volumes, moments and effects of free surface of liquids. (Proofs of formulae will not be required.) Effects of bilging and flooding compartments. Permeability. Trim and moment to change trim. Stability and trim when grounding. The Inclining Experiment. Effect of beam and freeboard on stability. Practical operations to ensure ships stability at Sea: Deck cargoes, homogeneous cargoes, suspended weights and cargoes liable to shift. Dangers of a ship with a heavy list and precautions when righting. Management of ballast tanks. Ballasting.

(4) PAPER 4. (Written.)

SHIPMASTER'S BUSINESS.

(2 hours.)

(The legal knowledge required will not go beyond the outline of Act 57/1951 and Mercantile Law which a shipmaster must know in order to conduct the business of a ship. A knowledge of the restrictions, if any, upon the discharge of oil or oily water into the sea, will, however, be required.)

- (a) Registration of ships. The Certificate of Registry and its legal significance.
- (b) Certificates and other documents required to be carried on ship, how they are obtained, and the period of their legal validity. Suez and Panama Canal Certificates.
- (c) Engagement, discharge and management of a ship's crew. Manning qualifications. Ship's Articles of Agreement. Wages and other remuneration. Discipline and treatment of offences. Fines and forfeiture. Deserters, deceased seamen, engagement of substitutes.
- (d) The official log-book and the law relating to entries.
- (e) Crew accommodation.
- (f) Hygiene of ships, living spaces, holds, etc. Water. Fresh and preserved food. Procedure required on board in cases of infectious disease, illness or accident. Quarantine procedure. Fumigation.
- (g) Entering and Clearing ship.
- (h) Loadline marks and their general and seasonal use. Entries and reports to be made respecting freeboard and draught.
- (i) The safety of the ship, crew and passengers. Assistance of vessels in distress and salvage. Duties in case of collision and accident.
- (j) The law relating to the reporting of ice and derelicts. Compulsory and non-compulsory pilotage.
- (k) The meaning of the term "passenger ship".
- (l) A general knowledge of shipping practice and documents with particular reference to Charter Parties and Bills of Lading, and an understanding of their principal clauses, e.g. Freight, Deviation, Always Afloat, Ice, Lay-days, Demurrage, Despatch, Protests, Certificate of Seaworthiness. A simple knowledge of the law relating to carriage of cargo and the shipowners' liabilities and duties.
- (m) A knowledge of the more important clauses contained in a Policy of Marine Insurance. The meaning of Average. Particular Average. General Average. Procedure in the case of General Average. Procedure at a port of refuge. Lloyd's Agents.

(5) PAPER 5. (Written.)

ELEMENTARY ENGINEERING AND ELECTRICITY INCLUDING ELECTRONIC NAVIGATIONAL AIDS.

(3 hours.)

1. Engineering.—

- (a) The meaning of the general engineering terms sensible heat, latent heat, saturated steam, superheated steam, work and power, horse-power, propeller pitch, slip.
- (b) A simple knowledge of the following: Types of marine boilers, coal and oil fired furnaces; procedure for raising steam. The action of the reciprocating steam engine, turbine machinery and diesel engines. Procedure when warming up, turning, starting, stopping and reversing engines.
- (c) The use of the condenser, evaporator and hot well. Use of circulating air, feed, bilge and ballast pumps. Valve chests.
- (d) Fuel consumption and economical speeds, estimation of minimum fuel consumption to complete a given voyage. Simple slip problems.
- (e) A simple knowledge of the types of refrigeration systems used on board ships.

2. *Electricity.*—

- (a) The simple alternator. Alternating current; frequency, phase relationship between two alternating quantities; effects of inductance, capacity and resistance. Resonance. Tuned circuits. The power transformer. The simple telephone and microphone.
- (b) R.F. oscillations. Radiation of electro-magnetic waves in free space—frequency, velocity and wavelength and their relationship. Reception of electromagnetic waves. Effects of the Ionosphere—ground wave, sky wave.
- (c) Thermionic valves. Thermal emission. Diode valve—use as a rectifier. Triode valve, use as voltage amplifier and use as simple oscillator.
- (d) Cathode ray tube—construction and action; electrostatic and electro-magnetic deflection. The time base as applied to C.R.T.

3. *Electronic Navigational Aids.*—

- (a) A simple knowledge of how Radar works. Displays, range and bearing discrimination, calibration, range strobes, monitoring, spurious echoes; side lobe effects, blind sectors, anomalous propagation and weather effects. Its use as an anti-collision device and navigational aid and an appreciation of its limitations.
- (b) The general principles underlying Hyperbolic Navigation. Fundamental differences between various systems.
- (c) A general knowledge of ship radio direction finding; rotating loop and goniometer systems. Maximum and minimum signals; sense. Quadrantal error. Calibration. Sunset and sunrise effects. Land effects.
- (d) A general knowledge of shore-based radio directional systems.
- (e) The general principles of echo sounding. Methods of transmission. Timing device. The receiver. Methods of recording. Reliability of indications.

(6) PAPER 6. (Written.)

METEOROLOGY.

In addition to the syllabus for Chief Navigating Officers:—

- (a) The principal cloud types.
- (b) Simple ideas of air masses and fronts.
- (c) Adiabatic changes in the atmosphere. Stability and instability.
- (d) The frontal theory of the formation of depressions.
- (e) To construct a synoptic chart (excluding fronts) from a number of coded groups as given in parts V and VI of Weather Messages for Shipping.
- (f) To decode groups as given in the international analysis code (Part IV), Weather Messages for shipping, and draw the weather map.
- (g) The use of a synoptic chart or weather map for deducing the probable weather and anticipated changes at a specified point or points.
- (h) The main types of floating ice and their origin. General ideas of distribution and seasonal movements. Navigation in the vicinity of ice.
- (i) General points to consider in the selection of ocean routes.

(7) ORAL.

- 1. (a) Exceptional circumstances. Loss of rudder; shifting a damaged rudder. Construction of jury rudders. Making and launching of rafts. Collision. Leaks. Damage of all kinds. Running repairs and precautions in case of accidents. Grounding—methods of refloating. Beaching a vessel. Steps to be taken when disabled and in distress.
- (b) Preservation of crew and passengers in the event of wreck. Abandoning a wrecked ship. Rockets and rocket apparatus. Communications with the shore.
- (c) Assisting a vessel in distress. Rescuing crew of a disabled ship.
- (d) Towing and being towed.
- (e) Bad weather manoeuvres. Precautions at anchor and at sea. Use of oil. Anchoring and working anchors and cables in all circumstances. Approaching rivers and harbours and manoeuvring in them.
- (f) Drydocking. General procedure and precautions to be observed. Distribution of weight. Drydocking with full cargo for inspection of propellers or shafting. Bilge blocks. Leaving the vessel water borne. Putting into port with damage to ship and/or cargo, both from business and technical points of view. Safeguarding of cargo.
- (g) Prevention of fire at sea. Spontaneous combustion. Full knowledge of the use of fire appliances and the precautions to be taken in their use. Special reference to the extinguishing of oil fuel fires.
- (h) Methods of fumigating holds and living spaces and safeguards in applying them.
- (i) General organisation of ship's work and handling and training of crew. A knowledge of training facilities available to members of the crew.
- (j) Compensation and adjustment of compasses. Demonstrations on Beall's Compass Deviascope.
- 2. Regulations for preventing collisions at sea, etc., as set forth in paragraph 5 (a) of the syllabus for the oral and practical examination of Second Navigating Officer.
- 3. The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate.

(8) SIGNALS.

To send and receive signals in:—

- (a) Semaphore up to eight words per minute.
- (b) Morse Code by flash lamp up to six words per minute.
- (c) International Code of Signals.

VI. MASTER OF A FOREIGN-GOING SHIP—SPECIAL GRADE.

General.

The mathematical and scientific knowledge required from candidates is such as to enable them to have a thorough understanding of their technical subjects.

Candidates will be examined orally in seamanship.

The syllabus for any subject is to be considered as including the syllabus (if any) for certificates of a lower grade.

PART A.

(1) PAPER 1. (Written.)

COMMERCIAL AND LEGAL KNOWLEDGE.

- (a) The Law relating to Registry, Masters and Seamen, passenger and emigrant ships as it concerns the shipmaster. Safety of ships (Classes I and VII); special shipping inquiries and courts covered by Act 57/1951; delivery of goods; carriage of goods by sea; wreck and salvage; pilotage; oil pollution. Contents of Notices issued by the Department of Transport.
- (b) The general management of ship's business, documents and procedure with Customs and Shipping Masters' Offices as they concern the Shipmaster.
- (c) Charter parties:—the contract, performance of the contract; bills of lading; liability of shipowners; demurrage; freight; lien; damages.
- (d) Marine Insurance:—different kinds of marine policies; the slip; insurable interest; disclosures and representations; express and implied warranties; meanings of the terms and clauses used in marine insurance policies; total loss—actual and constructive; abandonment; general average; particular average; the "memorandum"; York—Antwerp Rules.
- (e) Administration and working of ports. Use of quays, sheds, warehouses, docks and waterside termini. Cranes and their use—steam, electric, hydraulic, mobile, including floating coaling apparatus, mineral and grain elevators. Other appliances used in cargo handling. Graving docks. Floating docks.

(2) PAPER 2. (Written.)

SHIP CONSTRUCTION AND MAINTENANCE.

- (a) Types of ships in relation to strength, form and construction. Materials used in ship construction with a knowledge of their properties, uses and limitations. Annealing and testing of materials.
- (b) Maintenance of structure and equipment, including modern methods of combating corrosion.
- (c) Construction: A comprehensive knowledge of the various members of construction together with their functions and the methods employed in connecting them to other parts of the structure.
- (d) Types of welding processes, viz., oxy-acetylene, resistance, electric arc welding.
- (e) Types of weld (butt, fillet); details of butt, seam and lap joints; forms of weld (intermittent, chain intermittent, staggered intermittent). Lloyd's requirements in respect of these.
- (f) Advantages and disadvantages of welding. The common faults, such as lack of penetration, porosity. Tests for welded joints and materials. Welding sequences.
- (g) General ideas on subdivision.
- (h) Fire protection and warning systems.
- (i) Shipyard Procedure: A general knowledge of the practices followed from drawing office to completed ship, including launching.
- (j) Repairs on account of damage and wastage. Emergency repairs.
- (k) Loadline: Assigning Authorities, Surveys, Certificates. A general knowledge of the conditions of Assignment of Freeboards and of the factors affecting the Computation of Freeboard.
- (l) Tonnage: A knowledge of the general principles governing the assessment of South African Tonnage. Suez and Panama Canal Certificates.
- (m) Classification Societies: Their functions and requirements as regards construction and survey of steel ships.
- (n) Trials. The conducting of speed and manoeuvrability trials.

(3) PAPER 3. (Written.)

CHART CONSTRUCTION AND MARINE SURVEYING.

- (a) The candidate will be required to produce two completed chart frameworks certified as his own work. These shall consist of:
 - (i) A Mercator Chart on a scale of 1: 500,000 (at latitude of 62° 00') between latitude 61° 20'S. and latitude 62° 40'S. and between longitude 73° 00'E. and longitude 77° 00'E. The chart must show a short length of hypothetical coast-line and not less than two depth contours. All buoys, wreck, light and other symbols and all printing must conform to current Admiralty chart practice. Spheroidal meridional part tables are to be used to determine the latitude scale.
 - (ii) A plan, scale 1: 25,000, not less than 12 ins. by 12 ins. overall, embracing a point of reference in 51° 10' 55"N., 17° 08' 38"W. The plan shall be graduated in minutes and tenths for latitude and longitude and shall also have an inserted scale of nautical miles and cables. No topographical details will be required. Assume 6,083 ft. per minute of latitude and 3,825 ft. per minute of longitude. This work must be executed in ink and all relevant calculations must be included with each chart. Each chart must bear the legend, "I certify this chart is my own unaided work", and must be signed and dated by the candidate. In the event of failure in this paper or in Part A as a whole, the candidate will be required to produce an additional chart which may be either (i) or (ii) above at each subsequent attempt.
- These charts must be sent to the Examiner at the port of examination for examination and approval. Candidates should, in their own interests, submit these charts as early as possible before the date of the examination.
- (b) The theory and construction of charts on Mercator's Principle. Candidates will be asked to construct such a chart and plot points or to expand a given diagram or block. This work may be executed in pencil.
- (c) Hydrographic surveying. The framework of the survey, triangulation, surveying marks, traverses, heights and levelling, plotting sheet, soundings, coastlining, topography, tides and tidal streams, surveying out of sight of land, running surveys, sketch surveys, surveys of a river, searching for reported dangers. Methods of fixing shore positions in connection with hydrographic surveying. An understanding of the principles of the instruments used, but not a detailed knowledge, will be required.

(4) PAPER 4. (Written.)

METEOROLOGY, OCEANOGRAPHY AND ECONOMIC GEOGRAPHY.

(a) Meteorology.

- (i) The atmosphere; variations in pressure, density and temperature; humidity, saturation, dew point, lapse rates, potential temperature; stability and instability, turbulence; movement of air masses, convection, radiation, wind, including upper wind.
- (ii) Forecasting and its organisation; general weather synopsis, the frontal theory, the formation and movement of depressions and other weather systems, cloud development, supercooled water, formation of fog and mist, rain, hail, snow, thunderstorms.
- (iii) Climatology: the various types of climate; the general distribution of meteorological elements and their effects on climate, seasonal changes, insolation, prevailing winds; local weather characteristics treated generally.
- (iv) Formation of ice, floating ice, ice limits. Ice Patrol and Observation Services.

(b) Oceanography.

General characteristics of the seas: ocean deeps, surface temperature, density, salinity, oceanic circulation.

(c) Economic Geography.

- (i) The geographical and economic factors determining world production and the exchange of goods, transport and world trade.
- (ii) Principal products and their sources of supply: Food: cereals, meat, dairy produce, fish, fruit, sugar, vegetable oils, tea and coffee. Raw Materials: timber, rubber, sulphur, iron and steel, coal, salt, ores, oils and their products, textile plants and wool. Manufactured Goods: industrial production. Trade in manufactured goods.

PART B.

MATHEMATICS.

(1) PAPER 5. (Written.)

- (a) Theory of quadratic equations and limits of the function for real values of the variable. Problems involving quadratic equations.
- (b) Transformation of equations $y = ax^b$ and $y = ab^x$ to straight line graphs. Determination of constants from experimental data.
- (c) Properties of hyperbolae of navigational importance.
- (d) Trigonometrical functions of compound and multiple angles of any magnitude. Transformation of sums of trigonometrical functions into products and vice versa. Plane trigonometrical problems in two or three dimensions.
- (e) The geometrical properties of the sphere and spherical triangles. Proofs of the following formulae: cosine, sine, four-part, haversine, Napier's Rules and area in terms of spherical excess. The polar triangle. Solution of right angled quadrantal and oblique spherical triangles.
- (f) The theory of the stereographic projection.
- (g) Derivation of formulae used in the compilation of short method navigational tables.
- (h) Areas and volumes of plane and solid figures. Simpson's Rules for curvilinear figures.
- (i) The use of the binomial theorem for positive, negative and fractional real indices. Approximations.
- (j) Use (without proof) of the expansions of $\sin x$, $\cos x$ and e^x . Approximation. Limits.
- (k) Gradient of a line, the differential coefficient, rate of change. Differentiation of a function, a function of a function, a product and a quotient (including trigonometrical, inverse trigonometrical and logarithmic functions). Application to problems on rates of increase, small errors and maxima and minima.

- (f) (i) The idea of integration as a summation. The definite integral. Integration between limits.
 (ii) Standard integration of simple algebraic and trigonometrical functions. Simple exercises in integration by parts, by substitution and by utilising partial fractions.
 (iii) Application to areas and volumes of simple figures, e.g. circles, spheres, cones, etc., including (a) areas under simple curves, e.g. parabolic and curves with simple equations, e.g. $y = x(1+x^2)$ and (b) volumes of solids of revolution about the x -axis of these simple curves.

(iv) Approximate integration by Simpson's Rules.

Note.—Questions will not be asked on length of curves nor on area of surface of solids of revolution about an axis nor on hyperbolic functions, nor on integration by successive reduction nor on differential equations.

- (m) Systematic and random errors. Calculation of mean and standard deviation of a large sample. Standard error and confidence limits of the mean.

(2) PAPER 6. (Written).

GENERAL PHYSICS.

(a) Statistics.

- (i) Composition and resolution of forces. Parallel forces. Moments and couples. Conditions for equilibrium under co-planar forces. Stress, strain, Hooke's Law (including Young's Modulus of Elasticity), shearing forces and bending moments of simply supported beams and cantilevers under vertical point loads and uniformly distributed loads over the whole or part of the span.
 (ii) Centres of gravity of laminae and solids. Stable and unstable equilibrium.
 (iii) Simple machines and calculations thereon with or without friction.
 (iv) Boyle's Law. Barometer. Pressure gauges. Hydraulic press. Simple piston-type water pumps.

(b) Dynamics.

- (i) Composition and resolution of velocities and accelerations. Relative velocity. Mass. Weight. Newton's Laws of motion. Motion under gravity. Work, power, kinetic and potential energy. Momentum. Conservation of momentum. Direct impacts; coefficient of restitution.
 (ii) Motion in a circle. Simple harmonic motion. Simple pendulum. Vibration of a mass at the end of an elastic string. Newton's Laws applied to rotation, i.e. the relation between moment of inertia, applied couple and angular acceleration. Angular momentum. Kinetic energy of rotation.

(c) Heat and Temperature.

- (i) Transference of heat; conduction, convection and radiation, Newton's Laws of cooling. Thermal conductivity; emissivity; thermometry; temperature scales.
 (ii) Coefficient of linear, superficial and volume expansion of solids, liquids and gases; change of state; the triple point.
 (iii) Specific heat, latent heat and thermal capacity. Superheat. Charles' Law; isothermal and adiabatic expansion and compression of gases; refrigeration.
 (iv) Heat as a form of energy; mechanical equivalent of heat.
 (v) Vapour pressure; hygrometry; dew point and relative humidity.

(d) Light.

- (i) The laws of reflection. Reflection at plane and spherical mirrors. Formation of real and virtual images.
 (ii) The law of refraction; index of refraction; critical angle; total internal reflection. Real and apparent depth. Prisms. Thin lenses. Formation of images by lenses. Description of achromatic lenses.
 (iii) The refracting and reflecting telescope; prism binoculars; sextant; azimuth mirror.
 (iv) Intensity of illumination, candle power and the lumen.
 (v) Velocity of light. Light waves. The visible spectrum. Dispersion. Rainbows and coronae. Mirages and looming.

(e) Sound.

- Production and propagation of sound. Frequency, wave-length, velocity. Principle of siren. Effect of temperature and wind on the transmission of sound. Factors influencing velocity in air and water. Reflection, echoes. Beats. Doppler effect.

(3) PAPER 7. (Written).

MAGNETISM AND ELECTRICITY.

(a) Magnetism.

- (i) Magnetic properties of materials, induction, susceptibility and permeability. Magnetic effects of electric currents, including calculations.
 (ii) Terrestrial magnetism. Dip, total force, horizontal force and vertical force. Effects on the deviation of the compass accompanying change in the values of these elements. Variation.
 (iii) Ship's magnetism. Hard and soft iron. Permanent, sub-permanent and induced magnetism. Components P, Q, R, the rods a, b, c, d, e, f, g, h, k. The approximate coefficients A, B, C, D, E. Heeling Error. Lambda, Lambda two and Mu.
 (iv) General principles of compass correction. Methods of finding, and compensating a compass for, the various components which might cause deviation, including the effects of heel and trim.
 (v) Compensation by use of the Klevin deflector. Principle of the deflector method and information which can be deduced from readings obtained.
 (vi) The siting and lining up of compasses with due regard to the proximity of magnetic material, electrical devices and other disturbing influences.
 (vii) The theory of degaussing in ships fitted with M coils and compass compensation by means of B and heeling error coils.
 (viii) Swinging ship and the analysis of a deviation table.

(b) Electricity.

Candidates will be expected to show a full knowledge of the ground covered for the two previous grades. In addition, questions will be set calling for a knowledge of the following:—

(i) D.C. Circuits.

- (a) Kirchhoff's Laws and their applications.
 (b) Measurement of resistance by simple bridge method. Principle of Megger and its use.
 (c) Principles of Electrolysis; concept of the principles of Cathodic Protection.
 (d) A qualitative treatment of the effect of inductance in a D.C. circuit.
 (e) A qualitative treatment of the charge and discharge of a condenser in a resistive circuit.

(ii) D.C. Motors and Generators.

- (a) Simple relationships between speed, field strength, induced e.m.f., armature current and torque. Behaviour of shunt, series and compound-wound machines. The concept of power losses in a machine; efficiency. Simple starter for D.C. shunt-wound motor. Voltage control of shunt-wound dynamo.
 (b) The magnetic relay as exemplified in simple shunt motor starter with no-volt and overload releases.

(iii) A.C. Motors and Generators.—The principles of rotating armature, rotating field and inductor type generators and induction motors.

(iv) *A.C. Circuits.*

- (a) Peak, Average and Root Mean Square values of sinusoidal alternating voltages and currents.
- (b) A quantitative treatment of the effect of resistance, inductance and capacitance in a series A.C. circuit; reactance.
- (c) Simple examples of vector treatment of combinations of resistance, inductance and/or capacitance in a series A.C. circuit; impedance; resonance.
- (d) Power in an A.C. circuit; power factor.

(v) *High Frequency Circuits.*

- (a) The fundamental principles of heterodyne and superheterodyne reception.
- (b) Principles of suppression of radio interference from electrical equipment.
- (c) An elementary knowledge of the principles of directional aerials. The interpretation of the horizontal polar diagram, as exemplified in the case of the simple loop aerial and radar aerial.
- (d) A concept of the meaning of the term "Aerial Gain" and a knowledge of the use of the decibel as a unit used in the measurement of relative power.
- (e) The causes of fixed and variable errors to which navigational aids, used in South African ships, are subject.

(4) PAPER 8. (Written).

THEORETICAL NAVAL ARCHITECTURE AND HYDROSTATICS.

- (a) Density; specific gravity; flotation and buoyancy. The hydrometer. Archimedes' Principle; centre of pressure; fluid pressure and its relation to total thrust. Stability of floating bodies. Calculation of the centre of pressure by the common rules.
- (b) *Volumes and Areas.*—The theory and applications of the common rules to determine the waterplane and cross-sectional areas and displacement of a vessel, the centre of buoyancy and the centre of flotation.
- (c) *Moments of Inertia.*—The determination of longitudinal and transverse moment of inertia of a waterplane.
- (d) *Transverse Stability.*
 - (i) The general proof of $BM = I/V$. Applications of this formula to box-shaped and ship-shaped vessels. Attwood's formula for statical stability.
 - (ii) Proof of "wall-sided" formula, and its application to—
 - (a) angle of loll of unstable ship;
 - (b) heel due to shifting a weight transversely in a vessel with zero GM.
 - (iii) Theory and calculations in connection with the admission of water, especially applied to—
 - increase in draught due to bilging of box-shaped vessels;
 - permeability;
 - effect of free surface;
 - heel due to admission of water in a side compartment.
- (e) *Longitudinal stability.*—Proof of the formula for M.C.T. 1". Calculations involving change of trim due to:
 - Movement of weight(s) longitudinally.
 - Addition of weights.
 - Bilging of compartments.
 - Change of density of water in which ship floats. (C.F. not vertically above C.B.).
 - Problems involving draught when C.F. is not at mid-length.
- (f) *Drydocking.*—(i) An appreciation of and calculations involved in:—
 - (a) Change in stability conditions up to point when vessel is borne by the blocks.
 - (b) Change in stability conditions after waterlevel falls.
 - (c) Draught at which ship becomes unstable.
- (ii) A knowledge of precautions to be taken.
- (g) *Stresses and strains, bending moments and shearing forces.*—A knowledge of stresses and strains experienced by ships. An understanding of the "curves of loads", "curves of shearing force" and "curves of bending moments" of floating vessels.
- (h) *Stability data.*—A comprehensive knowledge of the uses of all kinds of hydrostatic, stability and stress data supplied to ships.
- (i) *Rolling of ships.*—Unresisted rolling in still water. A non-mathematical knowledge of rolling amongst waves.

(5) PAPER 9. (Written).

NAVIGATION AND NAVIGATIONAL AIDS.

- (a) The "cocked hat" and errors with astronomical and terrestrial position lines.
- (b) Terrestrial refraction. Dip and distance of sea and shore horizons.
- (c) Derivation of the formulae and use of the following:—
 - Ex Meridian Tables.
 - Pole Star corrections and Tables.
 - A, B, and C Tables.
 - Rates of change of azimuth and altitude.
 - Maximum and Meridian Altitudes.
 - Longitude by Equal Altitudes.
 - The Equation of Equal Altitudes.
 - Connection between errors in altitude, longitude, latitude and hour angle.
 - Position lines when altitude is very large. Rising and setting of sun and moon, twilight. Theory of the sextant vernier. Sextant corrections; collimation, centreing error, sextant parallax, use of artificial horizons and back angles. Formulae and their derivation of parallax and augmentation of moon's semi-diameter. Use of radio D/F position lines, curve of constant bearing and proof of convergency. Shape of the earth. Geocentric and geographic latitude, middle latitude. Equation of time and its components. Apparent motion of sun, moon and planets. Sidereal, synodic and nodical periods. Saros cycle. General ideas of precession and nutation. Different measurements of years, months and days. A general knowledge of ecliptic limits. Elementary knowledge of Kepler's Laws. Star magnitudes. Content of Abridged Nautical Almanac.
- (d) Description and use of all apparatus used to safeguard navigation in the open sea and coastwise, including radar and radio aids, radio direction finding and sonic sounding gear.
- (e) Theory of tides; tidal prediction; tide tables and their use; tidal streams; abnormal tides.
- (f) Theory of the gyroscope and the gyroscopic compass. A sound theoretical and practical knowledge of the Brown or Sperry M.N. type compass, including ballistic control, methods of damping, follow up and repeater system, ballistic deflection, course and speed error, rolling errors.

ORAL.

The candidate will be examined in the seamanship syllabus laid down for a Master's foreign-going certificate [see paragraph (7), sections 1 and 2, under the heading "V Master of a foreign-going ship" in this Annex] and he will be expected to reach a higher standard in his answers than a candidate for a Master's certificate. Signals, however, will not form part of the examination. The oral examination may be taken at the end of either part of the examination if the candidate is taking the parts separately. A candidate who passes the oral examination before he has passed in both parts of the written examination will be given a separate certificate to that effect. (A candidate who has passed either part of his written examination but has failed in the oral will be allowed, at the examiner's discretion, to take the oral again separately).

REPUBLIC OF SOUTH AFRICA.

CERTIFICATE OF COMPETENCY AS _____ OF A COASTING SHIP OF 100 OR MORE GROSS REGISTER TONS.

No. _____

TO _____

Whereas you have satisfied all the requirements prescribed by law for the grant to you of a certificate of competency as _____ of a coasting ship of 100 or more gross register tons, this certificate is granted to you in terms of section _____ of the Merchant Shipping Act, 1951 (Act No. 57 of 1951) as amended.

Dated at _____ this _____ day of _____ 19____

Minister of Transport.

PERSONAL DESCRIPTION OF CANDIDATE.

Height.		Colour of Eyes.	Colour of Hair.	Date of Birth.	Place of Birth.	Race.	Personal marks or peculiarities (if any).
Feet.	Inches.						

This certificate is given upon an examination passed at _____ on the _____ day of _____ 19____

Signature of proper officer or examiner.

Office Date Stamp.

Signature of holder.

PENALTIES FOR FRAUDULENT ACTS CONNECTED WITH THIS CERTIFICATE.

Any person who—

- (a) forges any certificate of competency issued under Act 57/1951; or
 - (b) produces or otherwise puts off any forged document purporting to be a certificate of competency issued under Act 57/1951, which he knows to be forged; or
 - (c) knowingly produces or otherwise uses any certificate of competency which has been cancelled or suspended or which has expired or to which he is not entitled; or
 - (d) lends to any person who he knows is not entitled thereto a certificate of competency or allows it to be used by any person,
- is guilty of an offence and on conviction is liable to a fine of R1,000.00 or two years' imprisonment or both [see sections 313 (2) and 315 of Act 57/1951].

N.B.—Any person other than the owner hereof becoming possessed of this certificate should transmit it forthwith to the Secretary for Transport, Pretoria.

ADDITIONAL QUALIFICATIONS.

REPUBLIC OF SOUTH AFRICA.

CERTIFICATE OF COMPETENCY AS _____ OF A FOREIGN-GOING SHIP.

No. _____

TO _____

Whereas you have satisfied all the requirements prescribed by law for the grant to you of a certificate of competency as _____ of a foreign-going ship this certificate is granted to you in terms of section _____ of the Merchant Shipping Act, 1951 (Act No. 57 of 1951), as amended.

Dated at _____ this _____ day of _____ 19____

Minister of Transport.

PERSONAL DESCRIPTION OF CANDIDATE.

Height.		Colour of Eyes.	Colour of Hair.	Date of Birth.	Place of Birth.	Race.	Personal marks or peculiarities (if any).
Feet.	Inches.						

This certificate is given upon an examination passed at _____ on the _____ day of _____ 19____

Signature of proper officer or examiner.

Office Date Stamp.

Signature of holder.

PENALTIES FOR FRAUDULENT ACTS CONNECTED WITH THIS CERTIFICATE.

Any person who—

- (a) forges any certificate of competency issued under Act 57/1951; or
 (b) produces or otherwise puts off any forged document purporting to be a certificate of competency issued under Act 57/1951, which he knows to be forged; or
 (c) knowingly produces or otherwise uses any certificate of competency which has been cancelled or suspended or which has expired or to which he is not entitled; or
 (d) lends to any person who he knows is not entitled thereto a certificate of competency or allows it to be used by any person, is guilty of an offence and on conviction is liable to a fine of R1,000 or two years' imprisonment or both [see sections 313 (2) and 315 of Act 57/1951].

N.B.—Any person other than the owner hereof becoming possessed of this certificate should transmit it forthwith to the Secretary for Transport, Pretoria.

ADDITIONAL QUALIFICATIONS.

T.V. 5/112A.

REPUBLIC OF SOUTH AFRICA.

CERTIFICATE OF COMPETENCY AS MASTER OF A FOREIGN-GOING SHIP—SPECIAL GRADE.

No. _____
 TO _____

Whereas you have satisfied all the requirements prescribed by law for the grant to you of a certificate of competency as Master of a foreign-going ship—Special Grade, this certificate is granted to you in terms of section _____ of the Merchant Shipping Act, 1951 (Act No. 57 of 1951), as amended.

Dated at _____ this _____ day of _____ 19____

Minister of Transport.

PERSONAL DESCRIPTION OF CANDIDATE.

Height.		Colour of Eyes.	Colour of Hair.	Date of Birth.	Place of Birth.	Race.	Personal marks or peculiarities (if any).
Feet.	Inches.						

This certificate is given upon an examination passed at _____ on the _____ day of _____ 19____

Signature of proper officer or examiner.

Office Date Stamp.

Signature of holder.

PENALTIES FOR FRAUDULENT ACTS CONNECTED WITH THIS CERTIFICATE.

Any person who—

- (a) forges any certificate of competency issued under Act 57/1951; or
 (b) produces or otherwise puts off any forged document purporting to be a certificate of competency issued under Act 57/1951, which he knows to be forged; or
 (c) knowingly produces or otherwise uses any certificate of competency which has been cancelled or suspended or which has expired or to which he is not entitled; or
 (d) lends to any person who he knows is not entitled thereto a certificate of competency or allows it to be used by any person, is guilty of an offence and on conviction is liable to a fine of R1,000 or two years' imprisonment or both [see sections 313 (2) and 315 of Act 57/1951].

N.B.—Any person other than the owner hereof becoming possessed of this certificate should transmit it forthwith to the Secretary for Transport, Pretoria.

ADDITIONAL QUALIFICATIONS.

T.V. 5/118.

ANNEX 5.

REPUBLIC OF SOUTH AFRICA.

CERTIFICATE OF SERVICE AS _____ OF _____

No. _____

NAME _____

having complied with the provisions of section 80 of the Merchant Shipping Act, 1951 (Act No. 57 of 1951), as amended, is hereby granted this CERTIFICATE OF SERVICE.

Dated at _____ this _____ day of _____ 19____

Secretary for Transport.

PERSONAL DESCRIPTION OF CANDIDATE.

Height.		Colour of Eyes.	Colour of Hair.	Date of Birth.	Place of Birth.	Race.	Personal marks or peculiarities (if any).
Feet.	Inches.						

Signature of holder.

Issued at the port of _____
this _____

day of _____ 19 _____

Signature of proper officer or examiner.

Date Stamp.

PENALTIES FOR FRAUDULENT ACTS CONNECTED WITH THIS CERTIFICATE.

Any person who—

- (a) forges any certificate of service issued under Act 57/1951; or
 - (b) produces or otherwise puts off any forged document purporting to be a certificate of service issued under Act 57/1951, which he knows to be forged; or
 - (c) knowingly produces or otherwise uses any certificate of service which has been cancelled or suspended or which has expired or to which he is not entitled; or
 - (d) lends to any person who he knows is not entitled thereto a certificate of service or allows it to be used by any person,
- is guilty of an offence and on conviction is liable to a fine of R1,000 or two years' imprisonment or both [see sections 313 (2) and 315 of Act 57/1951].

N.B.—Any person other than the owner hereof becoming possessed of this certificate should transmit it forthwith to the Secretary for Transport, Pretoria.

ADDITIONAL QUALIFICATIONS.

INHOUD.

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