

भारतीय बेतार टेलीग्राफी (वाणिज्यिक रेडियो प्रबालक
प्रवीणता प्रमाणपत्र और बेतार टेलीग्राफी) नियम, 1954।
नवम्बर 1981 तक संशोधित

**INDIAN WIRELESS TELEGRAPHY (COMMERCIAL
RADIO OPERATORS CERTIFICATES OF PROFICIENCY
AND LICENCE TO OPERATE WIRELESS TELEGRAPHY)
RULES, 1954.**

As modified upto November, 1981

Ministry of Communications

New Delhi, dated 6th January, 1955

Notification

No. WE-3/15/54. In exercise of the powers conferred by Section 7 of the Indian Telegraph Act, 1885 (XIII of 1885) and in supersession of rules 13 to 23 (both inclusive) of and the first and second schedules to the Indian Wireless Telegraph Rules, 1949, the Central Government hereby makes the following rules, namely :—

1. Short title and commencement :

- (1) These rules may be called the Indian Wireless Telegraphy (Commercial Radio Operators Certificates of Proficiency and Licence to Operate Wireless Telegraphy) Rules, 1954.
- (2) They shall come into force on the 1st day of April, 1956.

2. Definitions :

In these rules, unless the context otherwise requires,—

- (i) 'Convention' means the International Telecommunication Convention, (Malaga-Torremolinos 1973)¹ for the time being in force including the Telegraph Regulations, the Telephone Regulations, the Radio Regulations, and the Additional Radio Regulations made thereunder but does not include any portion of the said Convention or the said Regulations in respect of which the Central Government may, from time to time, make any reservations;
- (ii) 'wireless telegraphy' or 'radio telegraphy' includes wireless or radio telegraphy or telephony or both, as the context in each case may require.

3. Categories of certificates and licences :

(1) On the result of an examination which may, from time to time, be held by it or by an officer empowered by it in this behalf, the Central Government may grant, (in accordance with the terms of the Convention)² the following categories of certificates of proficiency in wireless telegraphy and licences to operate it, namely :—

Category I—Radio Telegraph Operator's Certificate and Licences :

- [(i) @Radio communication Operator's General Certificate and Licence.⁴
- (ii) First Class Radio Telegraph Operator's Certificate and Licence.
- (iii) Second Class Radio Telegraph Operator's Certificate and Licence.
- (iv) Special³ Radio Telegraph Operator's Certificate and Licence.

Category II—Radio—Telephone Operator's Certificate and Licences :

- (v) Radio Telephone Operator (General) Certificate and Licence.
- (vi) Radio Telephone Operator (Restricted) Certificate and Licence.

[(2). The examination for First Class Radio Telegraph Operator's Certificate and Licence should cease with effect from first half session of the year 1983. However, the part examinations for this certificate would continue to be held till the credit available to candidate is no longer valid.

(3) The First Class Radio Telegraph Operator's Certificate and Licence issued will continue to remain valid subject to the provisions of these rules.]⁴

¹Substituted by Amendment Rules 1977 for 'Montreux, 1965'.

²Inserted by Amendment Rules, 1971.

³The word 'class' omitted by Amendment Rule, 1977.

⁴Inserted by Amendments Rules, 1981.

@Note :—The Form and Syllabus of the examination for the award of Radio communication Operator's General Certificate can be obtained separately from the Ministry of Communications.

4. Dual holding of licences :

Except as otherwise provided by the Central Government, no person may hold more than one Radio-Telegraph Operator Licence and one Radio telephone Operator licence at the same time.

5. Eligibility for admission to examination :

No person shall be eligible for admission to an examination held under these rules for the grant of a certificate of proficiency in Radio telegraphy or radio telephony

(a) unless such person is

(i) a citizen of India, and

(ii) above the age of eighteen years on the date of commencement of the examination¹.

(b) If his Commercial Radio Operator's licence granted under any rules in force immediately before the commencement of these rules has been suspended or he is involved in any proceeding connected with the cancellation of any such licence or any other alleged violation of terms of the Convention or any provision of these rules.

****2

(c) unless a period of at least six weeks has elapsed since he last appeared in an examination for the award of Radio Telephone Operator's Certificate of Proficiency or three months in respect of an examination for the award of Radio telegraph Operator's Certificate of Proficiency².

6. Applications :

An application for permission to appear at an examination for the grant of a Certificate of Proficiency shall be made to the Central Government or any officer empowered by it in this behalf, in the form as at Annexure I to these rules, together with all the subsidiary forms and documents duly filled in and completed in all respect.

7. Fee for examination :

A candidate for admission to an examination for the grant of a certificate of proficiency (shall pay fees on the following scale.

(i) Radio communication Operator's General, First Class and Second Class Radio Telegraph Operator's Certificate and Licence :		Rs.
(a) Part I	20.00
(b) Part II and/or Part III	20.00
(ii) Special Radio Telegraph Operator's Certificate and Licence Part II and/or Part III	20.00
(iii) Any other Certificate of Proficiency and Licence.	20.00
(iv) Re-examination for the renewal of licence to operate endorsed in the Certificate of Proficiency	20.00 ³

(Provided that the Central Government may, in pursuance of any international agreement, exempt by general or special order, any candidate or class of candidates specified in the Order from the operation of this rule)⁴.

¹Substituted by Amendment Rules 1971.

²Proviso omitted by Amendment Rules, 1971.

³Inserted by Amendment Rules, 1971.

⁴Substituted by Amendment Rules, 1972 for the words "shall pay such fees as the Central Government may from time to time direct".

⁵Substituted by Amendment Rules, 1981.

⁶Substituted by the Amendment Rules 1974 for the words "Provided that where the Central Government is satisfied after such inquiry as it thinks fit, that it is expedient so to do in the public interest, it may, by general or special order, exempt from the operation of this rule any candidate or class of candidates specified in the order".

8. Examinations :

[(1)]¹ The examination for the award of a certificate of Proficiency shall be held in accordance with their terms of the Convention and (in the manner² determined from time to time by the Central Government who shall notify³ the place at which and the date on which such examination shall be held and publish the detailed syllabus in respect of the examination held for the grant of different classes of certificates.

(2) Any person admitted to the examination and found guilty of impersonation or of submitting fabricated documents or documents which have been tampered with or of making statements which are incorrect or false or of suppressing material information or of using or attempting to use unfair means in the examination hall or otherwise resorting to any other irregular or improper means for obtaining admission to the examination may, in addition to rendering himself liable to criminal prosecution, be debarred either permanently or for a specified period from appearing in any of the examinations held for the award of certificate of proficiency.⁴

(Provided that no order under this sub-rule shall be made unless the person concerned has been given a reasonable opportunity of making a representation against the action proposed to be taken.

(3) If any person is found guilty of any malpractice referred to in sub-rule (2) after the grant of a certificate of proficiency to such person, the Central Government may, in addition to prosecuting him, cancel the certificate so given :

Provided that the Central Government may, pending the cancellation of the certificate, suspend or endorse such certificate.

Provided further that no order under this sub-rule shall be made unless the person concerned has been given a reasonable opportunity of making a representation against the action proposed to be taken.⁴

[NOTE—The information regarding the manner and the syllabus for the examinations would be found in Annexure II.]⁵

9. Secrecy of correspondence :

Every holder of a certificate of proficiency shall be bound by the declaration made by him in his application for admission to the examination that he shall observe secrecy of correspondence.

10. Validity of licences :

(1) (A licence to operate shall be valid for a period specified by the Central Government, but it shall, in no case, be less than three years or more than five years)⁶ (from the date of declaration of result of the examinations).⁷

Provided that on the expiry of the initial period of the validity of licence, it may be renewed for a period of three years at a time if the holder applies for it before the date of expiry of licence except as provided in rule 10A, but not earlier than three months prior to that date, and—

(i) ⁸pays a fee of (Rs. 15).⁹

(ii) has a total experience of not less, than 3 months within 3 years [immediately preceding the date of expiry of a licence.] or

(iii) satisfies the Central Government by re-examination or otherwise that he still possesses all of the qualifications specified in his certificate.

¹Renumbered as sub-rule (1) by Amendment Rules 1971.

²Substituted by Amendment Rules 1971 for "as detailed in Annexure II to these rules and the Central Government shall from time to time notify".

³Inserted by Amendment Rules, 1971.

⁴Inserted by the Amendment Rules, 1974.

⁵Inserted by Amendment Rules, 1971.

⁶Substituted by Amendment Rules, 1974 for the words "A licence to operate shall be valid for a period to be specified by the Central Government but in no case it shall exceed five years", which were inserted vide Amendment Rules, 1971.

⁷Inserted by Amendment Rules, 1977.

⁸Substituted by Amendment Rules, 1972 for the words "pays such fees as the Central Government time to time direct".

⁹Substituted by Amendment Rules, 1981 for the letters and figures "Rs. 5".

¹[(2). If the holder of a licence, in the opinion of the Central Government has wilfully or negligently provided incorrect or false information for the purpose of re-validation of the licence, the Central Government may endorse, suspend or cancel the licence :

Provided that no order to suspend or cancel the licence under this rule shall be made unless the person concerned has been given a reasonable opportunity of making a representation against the action proposed to be taken.]

Explanation :

For the purposes of this rule, the expression 'experience' means the experience gained at a mobile station in the Maritime or Aeronautical Mobile Service as adequate for a Radio Officer or Wireless Operator or experience gained as an operator of Radiotelegraph apparatus at a Radiotelegraph station maintained on land for communication with mobile stations, in the Maritime or Aeronautical Service, as being appropriate to the licence, which is sought to be renewed.

[NOTE—The Central Government may revalidate the 'licence to operate', endorsed on a Radio-Telegraph Operator's Certificate, for service on a ship or aircraft radiotelephone station, if the holder of certificate has requisite experience only of a radiotelephone station]².

[10A. Surcharge late for renewal :

In case the holder of the licence does not apply for its renewal prior to the date of expiry of the licence as stipulated in sub-rule (1) of rule 10, he may apply for the renewal of Licence subsequently also but within a period of two years after the date of expiry of the licence on payment of a surcharge at the rate of Rs. 5/- for every half year or part thereof, but, however, the licence in such a case shall be renewed only for a period of three years from the date of expiry of the licence.]³

11. Issue of duplicate or replacement certificates and licences :

(1) An operator whose certificate or licence has been lost, mutilated or destroyed shall immediately notify the same to the Central Government. A properly executed application for duplicate shall be made to the Central Government embodying a statement of the circumstances involved in the loss, mutilation or destruction of the certificate or licence for which a duplicate is required. If the certificate or licence has been lost, the applicant must state that reasonable search has been made for it, and further, that in the event it be found, either the original or the duplicate shall be returned for cancellation.

(2) The Central Government may issue duplicate copies of any certificate or licence⁴ (and the following charges shall be levied for such issue)—

(i) For loss of certificate or licence or both for reasons beyond the control of the holder of the certificate of licence	5.00 ⁵
(ii) For loss of certificate or licence or both due to any other reason :—	
(a) for the issue of duplicate on the first occasion	7.50 ⁶
(b) for the issue of duplicate on the second occasion	15.00 ⁶
(c) for the issue of duplicate on any subsequent occasions	25.00 ⁶

¹Inserted by Amendment Rules, 1981.

²Inserted by Amendment Rules, 1971.

³Inserted by Amendment Rules, 1981.

⁴Substituted by Amendment Rules, 1972 for "and prescribe any fee therefor (and different fees may be prescribed for the issue of duplicate copies of certificates and licences in different circumstances and enhanced fees may also be prescribed for the issue of such duplicate copies for the second and subsequent time)."

(The bracketed words initially inserted vide S.R.O. 793 of 1957).

⁵Substituted by Amendment Rules, 1973 for the figure '3'.

⁶Substituted by Amendment Rules, 1973 for the figure '5', '10' and '20'.

- (3) The holder of a certificate or licence, whose name is legally changed may make application for replacement document in the new name by submitting a properly executed application accompanied by documentary evidence of the legality of the name change.

12. Discipline of Operators :

- (1) If the holder of a certificate or licence is proved in the opinion of the Central Government willfully or negligently to have failed to comply with the provisions of the Convention, or of these rules or of any regulations lawfully applicable to him in respect of wireless telegraphy or of wireless apparatus or the lawful orders of the master or person lawfully in charge of the station in which he is employed, the Central Government may endorse, suspend, or cancel the licence.
- (2) The Central Government may at any time require the holder of a Certificate of Proficiency to produce the same and the holder shall comply with such requisition.
- (3) The Central Government may at any time require the holder of a Certificate of Proficiency or licence to be re-examined in order to test his knowledge and ability and may, as a result of such examination, endorse, suspend or cancel the licence. No fee shall be chargeable for such examination.

13. Saving of Certificates issued under the earlier rules and in force at the date of commencement of these rules :

Nothing in these rules shall be deemed to affect the operation of any Certificate of Competency in Wireless telegraphy or any licence to operate it, which has been granted or issued by any competent authority under the Indian Wireless Telegraph Rules, 1929 or the Indian Wireless Telegraph Rules, 1933 or the Indian Wireless Telegraph Rules, 1949, as the case may be, and was in force immediately before the commencement of these rules, and notwithstanding anything contained in these rules, be valid for a period of six months after such commencement and shall be subject to the provisions of these rules in respect of all other matters.

14. (1) Admission and award of Certificate of Proficiency and 'Licence to Operate' to foreigners :

Notwithstanding anything contained in these rules, the Central Government may, subject to such conditions as it may impose from time to time,—

- (i) admit a person, who is not a citizen of India to an examination held under these rules, and
- (ii) award him a certificate of proficiency in wireless telegraphy and licence to operate)¹, or
- (iii) award him only a certificate of proficiency in wireless telegraphy)².

(2) * Recognition of certificates issued by other countries :

The Central Government may recognise, subject to any conditions it may prescribe from time to time, certificates of proficiency in radio telegraphy issued by a competent authority in any other country as a certificate of proficiency of the same class issued by it.

15. **** **** **** **** ****

¹Inserted by Amendment Rules, 1971.

²Inserted by Amendment Rules, 1974.

*Rule numbered as sub-rule (2) by Amendment Rules, 1971.

*Rule 15 omitted by Amendment Rules, 1972.

ANNEXURE I
GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS
(WIRELESS PLANNING & COORDINATION WING)
FORM OF APPLICATION

for
Admission to Examination for a Certificate of Proficiency in Radio-telegraphy/Radio telephony
(To be completed in candidate's own handwriting)

<p>The form when completed should be sent to the Wireless Adviser to the Government of India, Ministry of Communications, (Wireless Planning and Coordination Wing), Sardar Patel Bhavan, Sardar Square, Parliament Street, New Delhi-110001.</p>	<p style="text-align: center;">For use by the Office.</p> <p>Roll No.</p> <hr/> <p>Name & Postal address of applicant.</p>
---	--

- (a) Centre*
- (b) Class of Examination
 (Whether Full, Part I, Part II, Part III)
- (c) Service : Maritime/Aeronautical†
- (d) Month and Year of Examination
- (e) Details of Bank Draft@
- (i) Name of Bank & Branch
- (ii) No. and date
- (iii) Amount
- (f) State, if appearing in any other class of Certificate of proficiency Examination.
- | | |
|--------|-------|
| No/Yes | Class |
|--------|-------|

	NAME	SURNAME
1. Name of Applicant (In Block Letters) Name in Hindi, if possible		
2. Full postal address to which communication to be sent		
3. Permanent Home Address		

*Name of the centre duly notified at which the candidate desires to take the examination.

†Strike out the word not applicable.

@The Bank Draft should be obtained from any branch of the STATE BANK OF INDIA and drawn in favour of PAY AND ACCOUNTS OFFICER (SECRETARIAT), MINISTRY OF COMMUNICATIONS, NEW DELHI payable at the STATE BANK OF INDIA, NEW DELHI MAIN BRANCH, Parliament Street, New Delhi.

4. Description of Applicant :

- (a) Height Metres Centimetres
 (b) Colour of eyes (d) Complexion.....
 (c) Colour of hair (e) Mark of Identification

5. Date of birth : (Please attach attested copy of your school Leaving Certificate or Matriculation Certificate).

6. Place of birth (with District and State)

7. Name of the State to which you belong

8. (a) Are you a citizen of India by birth and/or domicile ?

NOTE : A certificate to this effect in the form given at page 4 of the application may be obtained from persons duly authorised from time to time by the Central Government (See Instructions to the Candidate).

(b) If not, to which country you belong.

9. Father's name, address and nationality (if dead, state last address)

10. Particulars of Certificate of Competency/Proficiency if any, already held by the applicant :

Class of Certificate	No. and date of issue	Authority by whom issued
----------------------	-----------------------	--------------------------

11. Educational Qualifications of the Candidate

12. Have you already passed Part I, Part II, Part III of First Class and/or Second Class or Part II of Special Class Examination ? If so, give the Particulars :

- (1) Class of Examination & Part
- (2) Roll No.
- (3) Examination Centre
- (4) Month and Year of Examination

DECLARATION

1. I hereby solemnly declare that the foregoing facts are true and correct and nothing is false therein and nothing material has been concealed therefrom. I also agree that in case any information given by me hereinbefore is found false at a later date, the certificate and licence to operate, if granted, will be cancelled.

2. I further solemnly give an undertaking that I will not either directly or indirectly divulge to any person, except when lawfully authorised or directed to do so the purport of any message which I may transmit or receive by means of any wireless apparatus operated by me or which may come to my knowledge in connection with the operation of said apparatus.

3. I have carefully read and understood the rules contained in the Indian Wireless Telegraphy (Commercial Radio Operators Certificate of Proficiency and Licence to operate Wireless Telegraphy), Rules 1954 and undertake to abide by them.

Signature of Witness :	Signature of Applicant
Name (In Capital letters) :	Name (In Block letters) :
Address :	Date :
Date :	Place :

enclose the following documents :

- (i) Bank Draft for Rs.
- (ii) Character and Nationality Certificate
- (iii) Domicile Certificate
- (iv) Certificate of experience (only in case of examination for conversion of Second Class certificate into First Class certificate)
- (v) Proof of Age (Applicant should be above 18 years of age on the date of commencement of the examination).
- (vi) Photographs 4×4.5 cms.—Two copies (one copy should be fixed by pasting in the space provided in the Attendance sheet attached herewith. The second copy should be enclosed in an envelope).

Signature of Applicant

CERTIFICATE OF CHARACTER AND NATIONALITY

Certified that I have known Shri..... Son of Shri.....
.....for the last.....years.....months. He bears
a good moral character and is of.....nationality. He is not related to me.

Signature

Place

Name

Dated.....

(Block Capitals)

Designation & Address

with Stamp

ANNEXURE II

General information regarding the examinations for the award of Certificate of Proficiency in Radio telegraphy and Radio-telephony.

PART A—GENERAL

1. General :

- (i) The service of every ship or aircraft radio-telegraph and radio-telephone station is required be performed by an operator holding appropriate class/category of Certificate of Proficiency and licence. These Certificates and Licences are awarded to those persons who qualify in the examinations conducted by the Central Government for obtaining employment and careers as radio officers, wireless or radio operators in the aeronautical mobile or maritime mobile services.
- (ii) The Central Government is not responsible for the training of the candidates appearing for these examinations. There are number of Wireless schools and institutions which offer to train candidates for these examinations. The Central Government does not exercise any supervision over the tuition at these schools and institutions. The Central Govt. may in certain cases declare the suitability of the type of apparatus used in the schools and institutions for training for these examinations and beyond this it has no responsibility for the running of these schools and institutions.

- (iii) The Central Government is also not responsible for either the employment of or for securing employment for the candidates who obtain these certificates of proficiency in radio-telegraphy and radiotelephony and licence to operate.
- (iv) There is no minimum educational qualification to be satisfied for appearing at these examinations but some schools insist on certain minimum. It should, however be emphasised that the syllabus for these examinations is such as would require a sound educational qualification at least up to the Matriculation/Higher Secondary standard with Mathematics and Physics as subjects for a candidate to efficiently study them. Particular attention of intending candidates is, therefore, drawn to the necessity for a good general education as a pre-requisite for attempting these examinations.
- (v) Intending candidates for these examinations are advised to read carefully the provisions of the Indian Wireless Telegraphy (Commercial Radio Operators Certificates of Proficiency and Licence to operate Wireless Telegraphy) Rules, 1954.

2. The following classes/categories of examinations are held :

- I Radio-Telegraphy**
1. First Class Radio-telegraph Operators Certificate (Maritime and Aeronautical Mobile Services).
 2. Second Class Radio-telegraph Operator's Certificate (Maritime Mobile Service)
 3. Special Radio-telegraph Operator's Certificate (Maritime Mobile Service)
- II Radio-Telephony**
1. Radio-telephone Operator's Certificate (General) (Maritime and Aeronautical Mobile Service.
 2. Radio-telephone Operator's Certificate (Restricted) (Maritime and Aeronautical Mobile Services).
- III Special examination for conversion of Second Class Radio-telegraph Operator's Certificates into First Class Radio-telegraph Operator's Certificate.**
- IV Special examinations for Renewal of Certificates of Proficiency Licences.**

3. Qualifications :

3.1. First Class Radiotelegraph Operator's Certificate :

The first class certificate is issued to candidates who have given proof of the technical and professional knowledge and qualifications enumerated below:—

- (a) Knowledge both of the general principles of electricity and of the theory of radio-knowledge of the adjustment and practical working of various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as a general knowledge of the principles of operation of other apparatus generally used for radio navigation.
- (b) Theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction finding apparatus mentioned in (a) above.
- (c) Practical knowledge necessary to repair, with the means available on board, damage which may occur to the radiotelegraph, radiotelephone and radio direction finding apparatus during a voyage.
- (d) Ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks), at a speed of twenty groups a minute, and a plain language text at a speed of twentyfive words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and or receiving shall be, as a rule, three minutes.
- (e) Ability to send correctly and to receive correctly by telephone,

- (f) Detailed knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications, knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio, and, in the case of air navigation, knowledge of the special provisions governing the aeronautical fixed, mobile, and radio-navigation services. In the latter case, the certificate states that the holder has successfully passed the test relating to these special provisions.
- (g) A sufficient knowledge of world geography, especially the principal shipping and air routes and the most important telecommunication routes.
- (h) Sufficient knowledge of the English language. Candidate should be able to express themselves satisfactorily in English, both orally and in writing.

3.2. *Second Class Radiotelegraph Operator's Certificate :*

The second class certificate is issued to candidate who have given proof of the technical and professional knowledge and qualifications enumerated below :

- (a) Elementary theoretical and practical knowledge of electricity and of radio, knowledge of the adjustment and practical working of the various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as elementary knowledge of the principles of operation of other apparatus in general use for radionavigation.
- (b) Elementary, theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radio telegraph, radiotelephone and radio direction finding apparatus mentioned in (a) above.
- (c) Practical knowledge sufficient for effecting repairs in the case of minor damage which may occur to the radiotelegraph, radiotelephone and radio direction finding apparatus during a voyage.
- (d) Ability to send correctly by hand and to receive correctly by ear in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of sixteen groups a minute and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall, as a rule be three minutes.
- (e) Ability to send correctly and to receive correctly by telephone.
- (f) Knowledge of the Regulations applying to radio-communications, knowledge of the documents relating to charges for radio-communications, knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio.
- (g) A sufficient knowledge of world geography, especially the principal shipping and air routes and the most important telecommunication routes.
- (h) Satisfactory knowledge of the English language. Candidates should be able to express themselves satisfactorily in English, both orally and in writing.

3.3. *Radiotelegraph Operator's Special Certificate :*

The Radiotelegraph operator's special certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below :—

- (a) Ability to send correctly by hand and receive correctly by ear in the Morse code, code groups (mixed letters, figures, and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters each figure of punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and of receiving shall, as a rule, be three minutes.

- (b) knowledge of the practical operation and adjustment of radiotelegraph and radiotelephone apparatus.
- (c) Knowledge of the Regulations applying to radiotelegraph and radiotelephone communication and specifically of that part of those Regulations relating to Safety of Life at Sea.
- (d) Ability to send correctly and to receive correctly by telephone.
- (e) Satisfactory knowledge of the English language.

3.4. Radiotelephone Operator's Certificate (General) :

The general radiotelephone operator's certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below :—

- (a) A knowledge of the elementary principles of radiotelephone.
- (b) Detailed knowledge of the practical operation and adjustment of radiotelephone apparatus.
- (c) Ability to send correctly and to receive correctly by telephone.
- (d) Detailed knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.
- (e) Knowledge of the special provisions governing the aeronautical, fixed, mobile and radionavigation services (for aeronautical service only).
- (f) Satisfactory knowledge of the English language.

3.5. Radiotelephone Operator's Certificate (Restricted) :

This certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below :—

- (a) Practical knowledge of radiotelephone operation and procedure.
- (b) Ability to send correctly and to receive correctly by telephone.
- (c) General knowledge of the Regulations applying to radiotelephone communications and specifically of that Part of those Regulations relating to the safety of life.
- (d) Knowledge of the special provisions governing aeronautical fixed, mobile and radionavigation service (for aeronautical service only).
- (e) The satisfactory knowledge of the English language.

4. Scope of authority to operate :

The holders of the various types of Certificates of Proficiency may, subject to their satisfying other conditions laid down by Government, operate mobile stations as shown below :

- (i) First Class Radiotelegraph Operator's Certificate. Radiotelegraph or radiotelephone service of any ship or aircraft station.
- (ii) Second Class Radiotelegraph Operator's Certificate. Radiotelegraph or radiotelephone service of any ship station.

NOTE—Difference between the First and Second Class Certificate in the Maritime Mobile Service is in the authority to become the Chief Radio Officers of certain categories of ship stations.

- (iii) Special Radiotelegraph Operator's Certificate. Service of ships for which a radiotelegraph installation is not made compulsory by international agreements, as well as the radiotelephone service of a ship station for which only a restricted radiotelephone Operator's certificate is required.

- (iv) Radiotelephone Operator's Certificate (General).
 (v) Radiotelephone Operator's Certificate (Restricted)

Radiotelephone service of any ship or aircraft station.

(i) The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any aircraft station, when working on frequencies of the maritime mobile service, provided that :

- the peak envelope power of the transmitter does not exceed 200 watts, or
- the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, with the stability of the frequencies maintained by the transmitter itself within the limits of tolerance specified by Radio Regulations and the peak envelope power of the transmitter does not exceed 1.5 kilowatts.

(ii) In the maritime mobile service, the holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any ship station, when working on frequencies of the maritime mobile service, provided that :

- the operation of the transmitter requires only the use of simple external controls, and excludes all manual adjustment of frequency determining elements, with the stability of the frequencies maintained by the transmitter itself within the limits of tolerance specified by Radio Regulations and the peak envelope power of the transmitter does not exceed 1 kilowatt.

(iii) The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any aircraft station operating on frequencies allocated exclusively to the aeronautical mobile service, provided that :

- the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, and that the stability of the frequencies is maintained by the transmitter itself within the limits of tolerance specified by the Radio Regulations.

5. Credentials of Candidates :

A candidate before being permitted to take any examination is required to furnish the following :—

- (i) Evidence of date of birth (attested copy of School leaving or Matriculation/Higher Secondary Certificate).
- (ii) Certificate of character and nationality. (In support of his declared nationality, a certificate in the prescribed form from a Gazetted Officer of Central or State Government or a Member of Parliament or State Legislature or Sub-Divisional Magistrate/Officer or Tehsildar or Naib/Deputy Tehsildar authorised to exercise magisterial powers).

6. Fees :

- 6.1. The fee for admission to an examination, issue of duplicate of certificate of proficiency or licence or renewal of licences to operate are specified in the Indian Wireless Telegraphy (Commercial Radio Operators Certificates of Proficiency and Licence to operate wireless Telegraphy) Rules, 1954.

- 6.2. The prescribed fee mentioned in para 6.1 above should be paid only by a crossed Bank Draft. The Bank Draft should be obtained from any Branch of the State Bank of India and drawn in favour of Pay and Accounts Officer (Secretariate), Ministry of Communications, New Delhi payable at the State Bank of India, New Delhi Main Branch, Parliament Street, New Delhi.
- 6.3. Fees paid for one examination will not be adjusted towards any other examination and will not be refunded except when :
- (i) the candidate is found to be ineligible for the examination.
 - (ii) arrangements cannot be made for the examination at a place desired by the candidate.
- 6.4. Candidates appearing for more than one examination should pay separate fees for each of the examination concerned.

7. Application for admission to an examination :

- (1) A candidate wishing to take an examination should submit his application to the Wireless Adviser to the Government of India, Ministry of Communications, Sardar Patel Bhavan, Parliament Street, New Delhi-110001, in the prescribed form (See annexure 1).
- (2) Candidates appearing for more than one examination should submit separate application in the prescribed form (See Annexure 1) for each examination.
- (3) Applications should be submitted complete in all respect, alongwith the required documents.
- (4) Incomplete applications or applications received after the prescribed date or without the requisite fee(s) are liable to be rejected.
- (5) In case of failure in an examination, a candidate shall not be permitted to appear in the same examination until after the lapse of a period of 3 months in case of examinations for 1st, 2nd and special class certificates and 6 weeks in case of all other examination.
- (6) Candidates are advised to read carefully the instructions for filling in the application (These instructions are attached with the application).

8. Admission Card :

Every candidate who has been admitted for an examination would be issued a card of admission to the examination which will specify the date, time and place of the examination.

9. Examinations :

9.1. First Class, Second Class and Special Certificates Examination :

The examination consists of the following parts :—

9.1.1. Part I Written Tests :

(i) Technical Theory :

This consists of two papers for the First Class Certificate, one paper for the 2nd Class Certificate and none for special certificate.

(ii) Radio Regulations and Traffic Procedure :

This consists of one paper for First and Second Class Certificates only none for special certificate.

9.1.2. Part II Morse :

(i) Receiving.

(ii) Sending.

9.1.3. *Part III Practicals :*

- (i) Commercial working (W/T and R/T)
- (ii) Practical Test on apparatus.

9.2. *Radiotelephone Operators General and Radiotelephone Operators' Restricted Certificates Examinations.*

- 9.2.1. *Part I* Practical Test in Regulations and Procedure (Commercial Working).
- 9.2.2. *Part II* Practical Test on apparatus or Oral Test.

10. **Syllabus :**

The detailed syllabus for each class of certificate is given in detail in part B of this annexure.

11. **Credit for passing Part Examination in case of First Class, Second Class and Special Radiotelegraph Operator's Certificates only.**

Credit for passing Part I or Part II can be carried to a subsequent examination for a specified period as indicated below :

- (i) A candidate must qualify in Part I before he is allowed to apply for Part II and Part III examination. Further, a candidate will not be allowed to take Part III unless he qualifies Part II. He can, however, apply for both parts II and III simultaneously.
- (ii) Further a candidate will not be permitted to re-appear in the same part for which he is already holding a credit.
- (iii) In case of failures in the tests within Part II and Part III there will be the system of elimination at each stage i.e. a candidate will not be allowed to take morse sending test if he fails in morse Receiving test and he will not be allowed to take Technical Practical test if he fails in Commercial Working test.
- (iv) In case of First and Second Class, a candidate who is successful in Part I in a particular Session shall pass the remaining Parts of the Examination i.e., Part II and Part III within a period of two years commencing from that session to complete the examination failing which he shall have to take the whole examination de novo.
- (v) In case of special class, a candidate who passes in Part II only in a particular session has to complete the examination by passing Part III within a period of two years, commencing from that session failing which he has to appear for both the parts de novo.

NOTE:—Session in this notification means either the first half or second half of a calendar year during which the examination is conducted.

12. **Choice of Service for First Class Certificates Examination :**

A candidate appearing for the First Class Certificate examination may choose either the Maritime or Aeronautical Mobile Service in which he wants to become a radio operator. His examination would be confined to the appropriate parts as given in the syllabus. His certificate would be issued for either the Maritime or the Aeronautical Service as appropriate.

A candidate may, at his option, be examined for both the services, on payment of the appropriate fees. Alternatively, he may first qualify for any one service and subsequently for the other. In that case, he would be required to pass only those parts of the examination special to the second service and would be required to pay the examination fees leviable for a part examination.

13. **Examination for conversion of second class certificate into First Class :**

- 13.1. A holder of the second class Radiotelegraph Operator's Certificate may appear only in Part II and Part III of the 1st Class Radiotelegraph Operator's Certificate, and obtain a First Class Radiotelegraph Operator's Certificate provided—

he has 12 months total experience within 3 years immediately preceding the date of application for such examination.

"Experience" for this purpose means experience at a mobile station in the Maritime Mobile Service as a Radio Officer or Wireless Operator or as an Operator of the Radiotelegraph apparatus at a radiotelegraph station maintained on land for communication with mobile station in the maritime mobile service.

14. Results of the Examination :

- 14.1. The result of each candidate who has appeared in the examination would be forwarded to him as soon as possible after the publication of the results of the examination.
- 14.2. No requests for revaluation of any paper would be entertained.

15. Language :

- 15.1. The examinations will be conducted in English and in accordance with the International Telecommunication Convention in vogue.

PART 'B'

Form, Syllabus and details of the Examinations

1. First Class Radiotelegraph Operator's Certificate :

(Maritime Mobile and Aeronautical Mobile Services)

1.1. Part I : Written Tests :

(a) *Technical Theory :*

(i) Paper I : On Magnetism, electricity and Radio Theory according to the Syllabus at Appendix I.

(ii) Paper II : Standard Radio Installations in use in the Maritime or Aeronautical Mobile Services according to the syllabus at Appendix II.

The paper I is compulsory for all candidates. It is of 3 hours duration. The paper II will be separate for the Maritime Mobile and Aeronautical Mobile Services and candidates will be required to take the one appropriate to their choice of service. It is of 2 hours duration. (A candidate may at his option take the papers for both the Services in which case the paper will be of 3 hours duration).

Each paper carries a maximum of 100 marks. Candidates must secure 66% marks for a pass.

Candidates are expected to have a comprehensive knowledge both of the fundamental principles and their general application with special reference to the apparatus in use in the Mobile Services.

(b) *Radio Regulations and Traffic Procedure:*

One paper according to the syllabus given at Appendix III. The paper will consist of 3 Sections

Section I—International Regulations common to both Maritime Mobile and Aeronautical Mobile Services;

Section II—Traffic Procedure special to the Maritime Mobile Service; and

Section III—Traffic Procedure special to the Aeronautical Mobile Service.

All candidates must compulsorily answer Section I and choose one of the Sections 2 and 3 as appropriate to their choice of Service. Candidates taking the examination for both the Services should answer all the Sections.

The paper is of 2 hours duration for any one Service and 3 hours when all the Sections are attempted.

The maximum number of marks is 100 for each Service and candidates must secure 66% for a pass.

1.2. Part II : Morse

(i) *Receiving.*

Plain language : (Speed 25 words per minute).

The test piece will consist of a passage of 375 letters, five letters counting as one word. More than 3 errors will disqualify a candidate.

Code Groups (Speed 20 groups per minute) :

The test piece will consist of 60 groups of five characters each, a figure or punctuation mark being counted as two characters.

It is recommended that the code groups test be written in block capitals. More than 3 errors will disqualify a candidate.

NOTE:—In the Morse Receiving Tests, candidates are required to receive for three consecutive minutes for each test at the prescribed speed from a double head-gear headphone receiver ordinarily used for radio telegraph reception, internationally morse code signals from a valve oscillator keyed either manually or automatically. A short practice piece may be sent at the prescribed speed before the start of the actual test. Candidates will NOT be allowed more than one attempt in each test. The test may be written in ink or pencil but must be in long hand and legible. Bad handwriting and over-writings will render a candidate liable to disqualification. The use of type-writers is not permitted.

(ii) Sending

Plain language Code : (Test pieces will be similar to those for receiving, tests).

NOTE:—In the Morse Sending Test, candidates are required to send on an ordinary morse key for three consecutive minutes for each test, at not less than the prescribed speed. A short practice piece may be allowed before the actual test. Candidates will NOT be allowed more than one attempt in each test. All errors during sending must be corrected. Uncorrected errors will disqualify a candidate in this test. Particular attention will be paid to the formation and spacing of signals; bad formation and/or spacing will render a candidate liable to disqualification.

1.3. Part III—Practical tests :

(i) Commercial Working

This test will be conducted both by radio-telephony and radio-telegraphy. The general method of conducting the tests will be so arranged as to somewhat represent actual working conditions. Background noise simulating actual working conditions may be injected into the circuit during the tests.

Candidates will be expected to know and make use of common codes and procedure signals appropriate to the service concerned and *keep a log of the communications made during the tests.*

Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are :

Preparation of messages for transmission—exchange of traffic priorities in traffic—requesting DF assistance—obtaining meteorological information—position reports distress urgency, safety and DF procedures etc.

The Radio-telephony test will be conducted over a synthetic R/T Circuit. Candidates will be required to use the phonetic alphabet and general procedure for R/T working.

The Radio-telegraphy test will be conducted on an oscillator circuit in the international morse code at the prescribed speeds. Candidates will be required to know and use the 'Q' code.

NOTE :—The tests will be conducted separately for the Maritime and Aeronautical Mobile Services. Candidates will choose the Service appropriate to them or both at their option. Time allowed for the tests is approximately thirty minutes for each service. The maximum number of marks is 100 for each Service and candidates should obtain 66% for a pass.

(ii) *Practical Test on Apparatus*

1. This test will be conducted on radio telegraph and radio telephone apparatus and ancillary equipment, testing instruments etc. commonly in use in the Maritime Mobile service and aeronautical mobile service, as appropriate.

This test will be conducted on the apparatus given in Appendix IVA and IV B.

2. Candidates are required to know—

- (i) the function of the various pieces of apparatus in the radio installations of mobile stations and ancillary equipment and testing instruments, etc.;
- (ii) the common faults and means usually adopted to remedy them; and
- (iii) how to :—
 - (a) change frequencies of the transmitting apparatus and operate receiver controls;
 - (b) start a transmitter and vary power;
 - (c) trace and clear faults in the transmitting and receiving apparatus;
 - (d) test and charge accumulators; and
 - (e) use D/F apparatus and obtain bearings.

3. Candidates will be required to demonstrate their ability to—

- (i) tune a receiver and transmitter to any required frequency and manipulate the controls for correct transmission and reception;
- (ii) make rapid changes of wave lengths;
- (iii) manipulate D/F equipment and obtain bearings;
- (iv) test and adjust auto alarm (in the Maritime mobile Service) and identify different components and trace and rectify faults in an apparatus and ancillary equipment with available testing instruments.

4. Oral questions may also be asked to test the thoroughness of the candidate's knowledge, and his knowledge of the significance and functions of the various controls of the apparatus and of the operation of the ancillary equipment. The test will generally be aimed at ensuring that candidates do not have merely a superficial knowledge of the apparatus.

NOTE :—The test will be conducted separately for the Maritime Mobile (Appendix IV A) and Aeronautical Mobile Service (Appendix IV B). Candidates will be required to choose the service as appropriate to them or both at their option.

The time allowed for the test is approximately one hour. The maximum number of marks is 100 for each service and candidates should obtain 66% for a pass.

2. Second Class Radio telegraph Operator's Certificate :

2.1. Part I :—(i) *Technical Theory* :

One paper of 3 hours duration on Magnetism, Electricity, Radio Theory and Standard Radio Installations in use in the Maritime Service. The detailed syllabus is given at Appendix I and IIA.

Candidates are expected to have a general knowledge of the fundamental principles and their application and a sound knowledge of the apparatus used in the Maritime Mobile Service.

The maximum marks for the paper are 100 and candidates must secure 50% marks for a pass.

(ii) *Radio Regulations & Traffic Procedure* :

One paper according to the syllabus at Appendix III (Maritime Mobile Service only).

The paper is of 2 hours duration. The maximum number of marks is 100 and candidates must secure 50% for a pass.

2.2. Part II : Morse

(i) Receiving

Plain language : (Speed 20 words per minute)

The test piece will consist of a passage of 300 letters, five letters counting as one word. More than 2 errors will disqualify a candidate.

Code language : (Speed 16 words per minute)

The test piece will consist of 48 groups of five characters each, a figure or punctuation mark being counted as two characters.

It is recommended that the code test be written in block capitals. More than 2 errors will disqualify a candidate.

NOTE:—In the Morse Receiving Tests, candidates are required to receive for three consecutive minutes for each test at the prescribed speed from a double head-gear headphone receiver ordinarily used for radio telegraph reception, international morse code signals from a valve oscillator keyed either manually or automatically. A short practice piece may be sent at the prescribed speed before the start of the actual test. Candidates will NOT be allowed more than one attempt in each test. The test may be written in ink or pencil but must be in long hand and legible. Bad handwriting and over-writings will render a candidate liable to disqualification. The use of typewriters is not permitted.

(ii) Sending

Plain language Code : (Test pieces will be similar to those for receiving tests).

NOTE:—In the morse sending test, candidates are required to send on an ordinary morse key for three consecutive minutes for each test, at not less than the prescribed speed. A short practice piece may be allowed before the actual test. Candidates will NOT be allowed more than one attempt in each test. All errors during sending must be corrected. Uncorrected errors will disqualify a candidate in this test. Particular attention will be paid to the formation and spacing of signals; bad formation and/or spacing will render a candidate liable to disqualification.

2.3. Part III : Practical tests :

(i) Commercial working :

This test will be conducted both by radio telephony and radio telegraphy. The general method of conducting the tests will be so arranged as to somewhat represent actual working conditions. Background noise simulating actual working conditions may be injected into the circuit during the tests.

Candidates will be expected to know and make use of common codes and procedure signals appropriate to the Service concerned and keep a log of the communications made during the tests.

Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are :

Preparation of messages for transmission—exchange of traffic—priorities in traffic—requesting DF assistance obtaining meteorological information position reports distress urgency, safety and DF procedures etc.

The Radio-telephony Test will be conducted over a synthetic R/T Circuit. Candidates will be required to use the phonetic alphabet and general procedure for R/T working.

The Radio telegraphy Test will be conducted on an oscillator circuit in the international morse code at the prescribed speeds. Candidates will be required to know and use the 'Q' code.

Note:—(A) The tests will be only for the Maritime Mobile Service.

(B) Time allowed for the tests is approximately 30 minutes. The maximum number of marks is 100 and candidates should obtain 50% for a pass.

(ii) *Practical Test on Apparatus :*

1. This test will be conducted on radio telegraph and radio telephone apparatus and ancillary equipment, testing instruments, etc., commonly in use in the maritime mobile service. This test will be conducted on the apparatus given in Appendix IV A.
2. Candidates are required to know :—
 - (i) the function of the various pieces of apparatus in the radio installations of mobile stations and ancillary equipment and testing instruments, etc.;
 - (ii) the common faults and means usually adopted to remedy them; and
 - (iii) how to :—
 - (a) change frequencies of the transmitting apparatus and operate receiver controls;
 - (b) start a transmitter and vary power;
 - (c) trace and clear faults in the transmitting and receiving apparatus;
 - (d) test and charge accumulators; and
 - (e) use D/F apparatus and obtain bearings.
3. Candidates will be required to demonstrate their ability to :—
 - (i) tune a receiver and transmitter to any required frequency and manipulate the controls for correct transmission and reception;
 - (ii) make rapid changes of wave lengths;
 - (iii) manipulate D/F equipment and obtain bearings;
 - (iv) test and adjust auto alarm (in the Maritime Mobile Service) and identify different components and trace and rectify faults in an apparatus and ancillary equipment with available testing instruments.
4. Oral questions may also be asked to test the thoroughness of the candidate's knowledge, and his knowledge of the significance and functions of the various controls of the apparatus and of the operation of the ancillary equipment. The test will generally be aimed at ensuring that candidates do not have merely a superficial knowledge of the apparatus.

Note:—The time allowed for the test is approximately one hour. The maximum number of marks is 100 and candidates should obtain 50% for a pass.

1. Examination for conversion of Second Class Certificate into First Class :

3.1. A holder of the Second Class Radio-telegraph Operators—Certificate may appear only in Part II and Part III of the First Class Examination and obtain a First Class Radio-telegraph Operator's Certificate provided :

He has 12 months total experience within 3 years immediately preceding the date of application for such examination. 'Experience' for this purpose means experience at a Mobile Station in the Maritime Mobile Service as a radio officer or wireless operator or as an operator of the radio telegraph apparatus at a radio telegraph station maintained on land for communication with Mobile Stations in the Maritime Mobile Service.

3.2. Form and details of the examination :

3.2.1. The candidates will be required to pass only Part II and Part III of the First Class Radio-telegraph Operator's examination. The syllabus will be the same as for the corresponding sections of the examination for the First Class Radio telegraph Operator's Certificate. In addition, in the practical test in commercial working, the candidate may be asked oral questions on regulations and procedure.

Candidates for the examination must furnish satisfactorily evidence of their experience as defined in para 3.1 above.

Fees for the First Class Certificate examination should be paid.

4. Special Radio Telegraph Operator's Certificate (Maritime Mobile Service) :

4.1 Part II :— Morse :

- | | |
|-----------------------------------|---|
| (i) Receiving }
(ii) Sending } | The morse Receiving and Sending tests are the same as for the second Class Radio-telegraph Operator's Certificates. |
|-----------------------------------|---|

4.2 Part III :— Practical Tests :

(i) Commercial Working :

This test will be conducted by Radio-telephony and Radio-telegraphy. The general method of conducting the test will be so arranged as to somewhat represent actual working conditions. Background noise simulating actual working conditions may be inducted into the circuit during the test.

Candidates will be expected to know and make use of common codes and procedures signals appropriate to the Maritime Mobile Services and keep a log of the communication made during the test.

Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are :

Preparation of messages for transmission—exchange of traffic—priorities in traffic—requesting D. F. assistance obtaining Meteorological information—position reports—distress urgency safety and D. F. procedures etc. In addition oral questions may be asked on regulations and procedure.

The Radio telephony test will be conducted over a synthetic R/T circuit. Candidates will be required to use the phonetic alphabet and general procedure for R/T working.

The Radio-telegraphy test will be conducted on an oscillator circuit in the international morse-code at the prescribed speed. Candidates will be required to know and use the 'Q' codes.

Note :—The time allowed for the test is approximately 25 minutes and additional 5 minutes for oral questions. The maximum number of marks is 100 and candidates should obtain 50% for a pass.

(ii) Practical test on apparatus :

Candidates will be expected to possess knowledge of the practical operation and adjustment of typical radio apparatus commonly in use in the Maritime Mobile Service (Appendix IV 'A') with particular emphasis on the ability to :

- detect and rectify simple faults involving replacement of faulty fuses, valves, microphones and headphones etc.;
- change frequency of transmitting apparatus; and
- tune receivers to different frequencies.

Oral questions may also be asked to test the candidates, knowledge of the significance and function of the various front panel controls on the apparatus.

The time allowed is approximately one hour. The maximum number of marks is 100 and candidates must secure 50% for a pass.

5. Radio-telephone Operator's (General) Certificate—Maritime Mobile Service:

5.1 *Practical Test in Regulations and procedure (Commercial Working)* .

This test shall cover the following :—

International 'Q' code and other abbreviations and signals used in the Maritime Mobile Service—International Telecommunication Convention, Radio and Additional Radio Regulations—that part of the safety of Life at Sea Convention relating to Radio Communications—distress, urgency and safety procedure—D/F procedure—principal Maritime navigational and tele-communications routes of the world—facilities afforded by coast stations—licence requirements for installation and operation of Radio apparatus on board ships—service documents to be carried on board ships—layout of message-log-keeping.

Oral questions will be asked to test the candidates knowledge of the Regulations and procedure applicable to Radio Telephony.

A practical test will be conducted over a synthetic R/T circuit. Candidates will be required to use phonetic and general procedure for R/T working. Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are—preparation of message for transmission, exchange of traffic, use of priorities requesting D/F assistance, obtaining meteorological informations, position reports, distress, urgency, safety and D/F procedures.

The maximum No. of marks is 100 and the candidate must secure 50% for a pass.

5.2 *Part II—Practical test on apparatus* :—

Candidates will be required to have.—

(a) *Adequate knowledge of :*

Electrical units (such as Volt, Ampere, Ohm and Watt) wave length, frequency and their relationship, basic principles of Electromagnetic wave propagation, effect of ionosphere on frequency and range, day and night frequencies, skip distance, fading, ground screening, choice of frequencies for different ranges, effect of radiated power and range, sunspot activities, aerials etc.

Study of vacuum tubes, valve as oscillator, Rectifier, detector, amplifier etc. Crystal oscillator frequency stability.

General idea of A1, A2, A3 emissions, Principles of operation of Microphones and headphones, A.V.C., Muting, side-tone, simplex and duplex R/T working.

Knowledge of crystals for spot frequencies, use of crystals for more than one channel, necessity of accurate tuning, Advantages and disadvantages of R/T communications, limitations of range due to interference, interference caused by R/T due to band spread.

(b) *Detailed knowledge of :*

Practical operations and adjustment of typical Radio-telephone apparatus with particular emphasis on the ability to :—

- (i) detect and rectify simple faults.
- (ii) detect and replace faulty fuses, Valves, Microphones and Headphones.
- (iii) change of frequency of transmitting apparatus and
- (iv) tune receivers to different frequencies.

Maximum No. of marks is 100 and a candidate must secure 50% for a pass.

6. Radio-telephone Operators (Restricted) Certificate (Maritime Mobile Service) :

6.1 *Part I*—This test will be similar to the Radio-telephone Operators (General) Certificate (Maritime Mobile Service).

6.2 *Part II*—Candidates will be required to have knowledge of the elementary principles of Radio-telephone including :—

- (a) Basic principles of electromagnetic wave propagation including propagation via ionosphere, effect of ionosphere on frequency and range, day and night frequencies, choice of different frequencies on different ranges, effect of change of transmitter power on range, basic principles and uses of A.V.C., side tone and muting microphone, headphone and their uses.
- (b) Practical operation adjustment and tuning of typical radio-telephone apparatus.
Maximum No. of marks is 100 and candidates must secure 50% for a pass.

7. Radio-telephone operators (General) Certificate (Aeromobile Service) :

7.1. *Part I*—*Practical test in Regulations and Procedure (Commercial working).*

This test shall cover the following :—

International Telecommunication Convention and Radio Regulation—General & Aeronautical Q—Code signals and other abbreviations contained in Annex -10 of International Civil Aviation Organisation. Communication Procedures as prescribed for Radio Telephone; communications procedures for Distress and urgency communications, Procedures for Direction Finding Systems, Procedures for distress communication in Maritime Mobile Service. Word spelling system used in Radio Telephony Licensing requirement of installation and operation of Radio apparatus on aircraft. Minimum requirement of Radio equipment to be carried on aircraft as prescribed in Annex 6 of International Civil Aviation Organisation and the Civil Aviation Authority in India. Flight information Regions in India and main radio communications and Navigation facilities available, Principal frequencies to be used for communication and navigation within India, Meteorological codes, preflight briefing services and their usages, knowledge of notices to airmen issued by Civil Aviation Authorities in India as applicable to the Aeronautical mobile and Air Traffic Control Services, upkeep of operators log, documents with which aircraft must be provided.

Oral questions will be asked to test the candidates knowledge of the Regulations and procedure applicable to Radio Telephone.

A practical test will be conducted over a synthetic R/T circuit. Candidates will be required to use phonetic alphabet and general procedure for R/T working. Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are : Preparation of message for transmission, exchange of traffic, use of priorities requesting D/F assistance, obtaining meteorological information, position reports, distress, urgency safety and D/F procedures.

The maximum No. of marks is 100 and the candidate must secure 50% for a pass.

7.2 *Part II*—*Practical Test on apparatus :*

Candidate will be required to have :—

(a) *Adequate knowledge of :*

Electrical units (such as Volt, Ampere, Ohm and Watt) Wavelength frequency and their relationship, Basic principles of Electromagnetic wave propagation, effect of ionosphere on frequency and range, day and night frequencies, skip distance, fading, ground screening, choice of frequencies for different ranges, effect of the radiated power on range, sunspot activity, serials etc.

Study of vacuum tubes, Valves as oscillator, Rectifier, detector, amplifier etc. Crystal oscillator, frequency stability. General idea of A1, A2, A3 emissions, Principles of operation of Microphones and headphones, A.V.C., Muting, side-tone, simplex and duplex R/T working band spread.

Knowledge of crystals for spot frequencies, use of crystals for more than one channel, necessity of accurate tuning. Advantages and disadvantages of R/T communications, limitations of range due to interference, interference caused by R/T due to band spread.

(b) *Detailed knowledge of :*

Practical operations and adjustment of typical Radio Telephone apparatus with particular emphasis on the ability to :—

(i) Detect and rectify simple faults.

(ii) Detect and replace faulty fuses, Valves, Microphones and headphones.

(iii) Change of frequency of transmitting apparatus and the receivers.

Maximum No. of marks is 100 and a candidate must secure 50% for a pass.

2. Radiotelephone Operators (Restricted) Certificate (Aeromobile Service) :

8.1 *Part I*—Practical test in Regulations and procedure :
(Commercial Working).

A practical test will be conducted over a synthetic R/T circuit. Candidates will be required to use phonetic alphabets and general procedure for radio-telephone working. Candidates will be required to carry out communications associated with mobile and/or base stations. Typical examples of what the candidates are expected to carry out are : Preparation of messages for transmission, exchange of traffic, use of priorities, requesting D/F assistance, obtaining meteorological informations, position reports, distress, urgency, safety and D/F procedures.

8.2 *Part II*—Oral examination in :

(a) Regulations and Procedure

(b) Radio Principles and Practice.

Syllabus : (a) Regulations and Procedure :—Shall cover the following

—International Telecommunication Convention and Radio Regulations.

—General and Aeronautical 'Q' Code signals and other abbreviations as contained in Annex. 10 (Vol. I & II) of International Civil Aviation Organisation.

—General Radio-telephone Communication procedures and radio-telephone communication procedure for distress, urgency and direction finding.

—Procedures for distress communication in Maritime Mobile Service.

—Words and figures spelling used in radio-telephony.

—Licensing requirements of installation and operation of radio apparatus used in aircraft.

—Minimum requirement of radio equipment to be carried on aircraft as prescribed in Annex. 6 of the International Civil Aviation Organisation and Civil Aviation Authority in India.

—Flight Information Regions in India and main Radio communication and Navigation facilities available together with principal frequencies to be used for communication and navigation within India.

—Meteorological codes, Pre-flight briefing services and their usages.

—Knowledge of notices to airmen issued by the Civil Aviation Authorities in India, as applicable to the Aeronautical mobile and Air traffic Control Services.

(b) Radio Principles & Practice :

Candidate will be required to have knowledge of :—

Electrical Units such as Volt, Ampere, Ohm and Watt, Wavelength, frequency and their relationship; Elementary knowledge of radio frequency propagation day and night frequencies, skip distance, fading, ground shadow and its effect on communication, choice of frequencies to attain maximum efficiency in handling air-ground HF communications.

General Knowledge of systems employed for air-ground communications including SELCAL operation, inter-communications and announcing systems of aircraft; elementary knowledge of Radio-navigation Aids, operation of microphones and headphones, squelch, AVC, volume control, tuning of transmitter, simplex and duplex operation; advantages and disadvantages of Radio-telephone communication; limitations of range due to frequency interference, etc.

NOTE—(i) The maximum marks in each Part I and II is 100 and minimum for pass is 50 in individual parts. Candidates who do not qualify in Part I will be considered failed in the R/T examination.

(ii) References for study (Limited to Aeromobile Service requirements and allied regulatory matters).

There are many books which cover various aspects of the syllabus, a brief selection of which is given below for guidance.

- (a) International Radio Regulations.
- (b) ICAO—Publications, Annex 10 Vol. I and II.
- (c) AERADIO Published by the DGCA of India (Government of India Publications).
- (d) Aeronautical Information publication (Government of India Publications).
- (e) Suitable book(s) for Radio Communication Principles, many books are available on this subject.

The Amateur Radio Relay league handbook may be useful for basic radio understanding.

(iii) It is recommended that the candidates in their own interest may study the functioning of a typical modern R/T installation on board a civil passenger aircraft, as also at the ground station.

APPENDIX I

Magnetism, Electricity and Radio Theory

1. General Electric Principles :

- Electrical units, volt, ampere, ampere-hour, coulomb, ohm, and watt.
- Ohm's Law, Kirchoff's Law and calculations involving the application of these laws.
- Resistors, uses and features of wire-wound, composition, variable, non-linear, close tolerance and semi-conductor types.
- Resistivity, resistance of conductor, temperature effect, skin effect, conductance. Colour coding and tolerance of resistors.
- Faraday's Law of Induction, Lenz's Law, Inductance, units of Inductance.
- Inductors in series and parallel. Use of iron core, air core, ferrite core inductors. Time constant of an LR circuit.
- Capacitance, units of capacity, Types of capacitors, dielectrics, dielectric constant, dielectric strength, Break down voltage Capacitors in series and parallel Time constant of an RC circuit.

2. Magnetism :

Properties of magnetic materials and ferrites, Magnetic fields, magnetic flux, flux density and permeability, Ferrites and their applications.

Electromagnetism :

Magnetic effect of an electric current—magnetic fields. Typical Magnetisation curve, Hysteresis loops for soft and hard materials.

Principle of relays, use of quick acting relays, adjustments, maintenance and common faults.

4. Motors and Generators :

—Alternators, Principles and construction, single phase and three phase A.C. systems, eddy currents and laminations.

—Direct current generators, principle; commutator and brushes.

Prevention of sparking and armature reaction.

Types, construction and characteristics of D.C. Machines, power losses, voltage regulation.

Motor principle, Back E.M.F., speed variation.

Classification of motors, construction, characteristics and uses; Starter, 'no-volt' and 'overload release' coils.

Induction and synchronous motors, Rotary transformers, rotary convertors, motor-generators.

—Protective devices and general maintenance of above machines.

5. Alternating Current :

—Sinusoidal alternating quantities—peak, instantaneous, R.M.S. and average values, phase difference, vector addition.

Reactance and impedance, power and power factor, series and parallel circuits, resonance, bandwidth and half power points, Simple calculations of impedance, power and frequency.

Selectivity, fitters and their uses, Q of coils; coupled circuits.

6. Transformers :

Construction, iron core transformers, auto-transformers, Voltage, current and power relationships, Transformer losses, Transformer as a matching device.

Regulation and efficiency.

7. Measuring Instruments :

Moving coil, moving iron, thermocouple and hot wire meters.

Megger.

Use of shunts and multipliers, Essential characteristics and uses of absorption wave meters and V.T.V.M.

8. Primary and Secondary Cells :

—Primary Cells; General Principles, construction.

—Secondary Cells : Lead-acid, Nickel-cadmium and Nickel-iron; Construction, electrolyte, initial charging and discharging, recharging, capacity, specific gravity, typical faults and remedies charging circuits and testing of batteries.

9. Vacuum Tubes :

—Thermionic, photo-electric and secondary emissions, directly and indirectly heated cathodes.

—Thermionic diodes, triodes and other multielectrode valves, their functions, typical uses and characteristics.

—Valve as an oscillator, rectifier, amplifier, detector, etc.

—Mutual conductance, A.C. resistance, and amplification factor and their relationship.

10. Semiconductor devices and Transistors :

—Conduction in semiconducting materials.

—Crystal Structure.

—Semiconductor diodes, action and electrical characteristics, symbols, types of devices and their use.

—Transistors : Theory, construction, NPN and PNP types, characteristics curves, symbols, connections and ratings, biasing methods and bias stabilisation.

—Polarity and typical values of supplies.

—Transistor as rectifiers, amplifiers, oscillators, etc.

—Integrated circuits.

—Thermal effects in transistor performance, heat sink, temperature compensating methods, matched—pairs and its utility.

11. Power supplies :

Half wave and full wave rectifiers, Bridge rectifiers, silicon controlled rectifiers and their uses three phase connections, voltage doublers, metal rectifiers, vibrators, smoothing and regulation stabilisers, Zener diodes, Electronically regulated power-supplies employing vacuum tubes as well as solid state devices.

12. A.F. Amplifiers :

- Resistance capacity, tuned choke capacity, choke, direct and transformer coupling.
- Power amplifiers, Class A, AB, B and pushpull.
- Cathode follower, negative feed back, gain control, decoupling and prevention of instability in audio amplifier.
- Miller effect, audio fitter, gain control, noise limiters and decoupling.

13. R.F. Amplifier :

- Tuned amplifier; gain and frequency response, different types of coupling.
- R.F. Power Amplifier; Class C, buffer amplifier, fitters, decoupling, prevention of parasitic oscillations and neutralisation.
- Harmonic generator.

14. Oscillators:

- Principles, factors determining frequency of oscillation, shunt and series feeds, tuned grid, tuned plate, tuned grid, Hartley and Colpitt Oscillators.
- Piezo electric effect, Crystal control oscillator, magnetron, Klystron oscillators.
- Stability of oscillators.

15. Modulation, Frequency Changing and Detection :

- General theory of audio insertion, microphones, functions and construction.
- Modulation : amplitude, frequency and phase modulators.
- Mixers : addition and multiplication.
- Detectors : Diode, Grid, anode bend and balanced detectors, discrimination.
- S.S.B : suppressed carrier and with carrier, balanced modulators, merits and demerits of SSB.

16. Aerials :

- Principal of radiation, polarisation, radiation resistance, power gain and efficiency, band width, effective height, standing wave ratio, ground effects, radiation angle, aerial reactance and capacitance, voltage and current distribution, methods of coupling and matching, feeders, wave-guide.
- Different types of antennas : half wave, verticle, inverted 'V', long wire, yagi, long periodic aerials, etc. for different freq. bands, polar diagrams of radiation, Aerials for micro-wave

17. Propagation :

Characteristics of radio waves, ionosphere, troposphere, V.L.F. LF, M.F., H.F., V.H.F., U.H.F. and S.H.F. propagation, ground and sky waves, properties of different reflecting layers, skip distance, fading M.U.F., Optimum working frequency, critical frequency, polarisation, echo, solar disturbance and its effects on radiocommunication, day and night frequencies. definition of radiated, mean, peak and average power.

18. Transmitters :

- Typical transmitter employing C.W., M.C.W., D.S.B., S.S.B. in I.F., M.F. and H.F. bands, Functions of various stages, circuit diagram of basic and essential stages.
- Methods of keying, key clicks.
- Automatic keying device, theory of its operation.
- V.H.F. transmitters, employing F.M. Preemphasis and deemphasis.

19. Receivers :

- Typical radio communication receiver capable of receiving CW, MCW, DSB and SSB in various bands, detailed functions of various stages, circuit diagram of essential and basic stages.
- Selectivity, sensitivity, fidelity, signal to noise ratio, superhetrodyne receivers, spurious responses, image interference, adjacent channel interference, noise limiters, muting, A.V.C. and crystal filters.
- Principles of V.H.F. receivers employing AM/FM techniques.

20. Facsimile :

- Principles of facsimile transmission and reception.

21. Space Communications :

Elementary principles of communication via satellites.

22. Radio Navigational Aids :

- Direction Finders : basic principles, polar diagram of reception, Goniometer, rotating loop B.T. and Adoclock systems, errors in D.F., calibration.
- Radars : basic principles and block diagram of a typical radar, Cathode Ray tube, oscilloscope, simple pulse techniques, multi vibrators, time base.
- Radio beacons, sonars, hydrophones and echo sounders : elementary principles of operation.

23. In addition to the above, the syllabus for First Class Radiotelegraph Operator's Certificate of Proficiency examination shall also include the following items :**23.1. Alternating currents and transformers :**

Three phase transformers, polyphase alternating currents and the production of rotating fields, the generation of 3 phase alternating current, circuit of 3 phase 4 wire system, star and delta connection for generators and loads, relationship between line and phase current for balanced load.

23.2. Semi-conducting devices and transistor :

h parameters, functions, typical uses and essential features of field effect transistors, photo-electric cell and other semi-conducting devices, pulse circuits, multivibrators, gates, emitter follower.

23.3. Power supplies :

Transistorised power supply circuits.

23.4. A.F. and R.F. Amplifiers :

Methods of obtaining bias and gain both for valve and transistor circuits, wide band amplifiers, Reactive loads on amplifiers, phase splitters circuits grounded grid and cascade amplifier.

23.5. Oscillator circuit :

Comparable transistor circuits for various types of oscillators, reactance valve and oscillator control.

23.6. Modulation and detection :

Ratio detectors, ring bridge modulator.

23.7. Aerials :

Protective devices used in aerials, whip aerials and modern mast aerials, reciprocating theorem.

23.8. Receivers :

S.S.B. receivers, knowledge of working of transistorised communication receiver and its practical circuits.

23.9. Servomechanism :

Principles and functions of Servo motors.

23.10. Direction Finding and Navigational Aids :

Theory and special application of balanced modulators operating from Gonio, sense and servo oscillator signals to provide servo operation of Gonio for A.D.F.—

Theory and operation of Automatic keying Device.

Basic knowledge of radar beacons—Elementary theory operation and maintenance of free Gyro-scop.

APPENDIX II
STANDARD RADIO INSTALLATION

(Detailed Syllabus)

A. MARITIME MOBILE SERVICE

(a) Detailed knowledge of principles of operation and circuitry of equipment listed in Appendix IV with particular reference to the following :—

(i) Transmitters :

- Block diagrams suitable for operation on M.F., H.F. and V.H.F.
- Functions of different stages;
- Essential metering facilities and purpose thereof;
- Circuit diagrams of basic and essential stages;
- Methods of Keying;
- Modulation techniques;
- Over-load and protection against over-load;
- Arrangement for safety of personnel;
- Neutralisation, frequency stability and automatic frequency changing arrangements;
- Aerial coupling and tuning;
- Power output efficiency and control of output power;
- Functions of control;
- Power supply and other ancillary equipment;
- Special features of ship borne transmitters.

(ii) Receivers :

- Block diagram and functions stage by stage;
- noise limiter, A.V.C., selectivity, B.F.O., Calibrator, desensitizing, muting, sensitivity, fidelity and stability;
- circuit diagram of important stages;
- functions of various controls;
- power supply and other ancillary equipment.

(iii) Direction Finder :

- Block diagram and function stage by stage;
- Functions of various controls;
- Goniometer, sense, calibration choke;
- Power supply and other ancillary equipment.

(iv) Auto-Alarm :

- Block diagram and function stage by stage;
- Provision for testing;
- Failure warning devices;
- Functions of various relays in the selector units;
- Power supply and
- Other ancillary equipment.

(v) Aerials :

- Types of aerials used on board ship.
- Installation and maintenance of aerials for transmission, reception and direction finding used on ship;
- Lay-out diagrams of some typical aerials.

B. AERONAUTICAL MOBILE SERVICE

(a) Detailed knowledge of principles of operation and circuitry of equipment listed in Appendix IV B with particular reference to the following :

(i) Transmitter :

- Block diagram suitable for operation on H.F. and V.H.F.
- Functions of different stages;
- Circuit diagrams of basic and essential stages;
- Essential metering facilities;
- Modulation techniques;
- Over-load and protection against over-load;
- Neutralisation, Frequency stability and frequency setting;
- Aerial coupling and Tuning;
- Power output, efficiency and control of output;
- Functions of controls;
- Power supply and other ancillary equipment;
- Special features of airborne transmitter.

(ii) Receivers :

- Block diagram and function stage by stage;
- Circuit diagram of important stages;
- Noise limiter, A.V.C., selectivity, sensitivity fidelity, stability, muting;
- Functions of various controls;
- Power supply and other ancillary equipment.

(iii) Direction finder and Navigational Aids :

- Block diagram and function stage by stage of the Automatic Direction Finding Receiver and the functions of its various controls.

(iv) Types of aeriels used on aircraft for different purposes.**APPENDIX III****REGULATION AND TRAFFIC PROCEDURE****(Detailed Syllabus)****A. MARITIME MOBILE SERVICE**

International 'Q' code and other abbreviations and signals used in the Maritime Mobile Service—International Telecommunication Convention, Radio and Additional Radio Regulations that part of the Safety of Life at Sea Convention relating to Radio Communications—distress, urgency and Safety procedure D/F procedure—principles Maritime Navigational and telecommunication routes of the world—facilities afforded by coast stations—licence requirements for installation and operation of Radio apparatus on board ships—service documents to be carried on board ships layout of message—log-keeping;

B. AERONAUTICAL MOBILE SERVICE

International Telecommunication convention and Radio Regulations; general and aeronautical 'Q' code signals and other abbreviations as contained in ICAO Annex. 10 with special reference to operation in the aeronautical mobile service;

Communication procedures as prescribed in ICAO Annex. 10 both for Radio telegraph and radio telephone communication particularly those applicable to the aeronautical mobile service—procedures for distress, urgency and safety communications—procedures for distress communication in the Maritime Mobile Service;

Word-spelling systems used in radio telephony applicable in the Aeronautical Mobile Service and the Maritime Mobile Service;

Licensing requirements of installation and operation of radio apparatus on aircraft—minimum requirement of radio equipment to be carried on aircraft for international air operations as prescribed in the ICAO Annex. 6 and for other operations as prescribed by Civil Aviation authority in India vide Notice to Airmen No. 9 of 1954.

Flight information regions in India and main radio communication and navigation facilities available—principles frequencies to be used for communication and navigational assistance for flights within India Meteorological codes—preflight briefing services and their useage—knowledge of relevant publications and notice to Airmen issued by the Civil Aviation authority in India as applicable to the Aeronautical Mobile and Air Traffic Control Services upkeep of operators logs—documents with which aircraft stations must be provided.

APPENDIX IV

PRACTICAL TEST ON APPARATUS

The technical practical test will be conducted on the following equipment:—

A. MARITIME MOBILE SERVICE

Following Marine Radio equipment installed on board a ship:

1. Main Transmitter.
2. Emergency Transmitter.
3. V.H.F. Transmitter and Receiver.
4. Main Receiver.
5. Emergency Receiver.
6. Direction Finder.
7. Auto Alarm.
8. Power supply and other ancillary equipment associated with the above apparatus.

B. AERONAUTICAL MOBILE SERVICE

The following Aeronautical Radio equipment installed on board an aircraft:

1. H.F. Transmitter.
2. H.F. Receiver.
3. V.H.F. Transmitter.
4. V.H.F. Receiver.
5. Automatic Direction Finder.
6. Radar Compass.
7. Power supply and other ancillary equipment associated with the above apparatus.

NOTE : 1 The specific type of equipment on which the practical test will be conducted in the Maritime or Aeronautical mobile service will be specified to the concerned Institutions/ Organisations from time to time.

2. Until further orders the practical tests will be conducted on the apparatus listed below :

(a) *Maritime Mobile Service* : (The test shall be conducted either on Marconi or BEL equipment available at the Examination Centre).

EQUIPMENT	MARCONI	BEL
1. Main Transmitter (HF)	Oceanspan VII	MHS-108, MMN-126
2. Emergency Transmitter (M.F.)	Reliance	MMN-118
3. Main Receiver	(i) Electra (ii) Mercury	HS 412 with LF adaptor
4. Emergency Receiver	Alert	HN 413
5. VHF Transceiver	—	LVN 223
6. Auto-Alarm	Vigilant or Seaguard	AQ 6407
7. Direction Finder	Lodestones	(will be specified later on)
8. Power supply and other ancillary equipment associated with the above apparatus.		

(b) *Aeronautical Mobile Service :*

1. Collins, U.S.A. H.F. Transmitter/Receiver type 618S-1.
2. Bendix, U.S.A. V.H.F. Transreceiver type RTA 42-A.
3. Collins, U.S.A. Automatic Direction Finder type 51Y-3.
4. Power supply and other ancillary equipment associated with the above apparatus.

INFORMATION AND SYLLABUS REGARDING
EXAMINATION FOR THE AWARD
OF
RADIOTELEPHONE OPERATOR'S (INLAND MARITIME)
CERTIFICATE AND LICENCE

**Radiotelephone Operator's (Inland Maritime)
Certificate Examination**

1. Qualifications

- 1.1. Practical knowledge of the Radiotelephone operation and procedure.
- 1.2. Ability to send correctly and to receive correctly by telephone.
- 1.3. General knowledge of the regulations applying to radiotelephone communication especially that part of the regulations relating to distress, urgency and safety communications.

2. Scope

- (a) The service of Radiotelephone stations installed on board port flotilla, fishing vessels, water crafts, etc. It shall include such vessels which are operating in services other than 'Public correspondence service'.
- (b) Established for maintenance and testing of radiotelephone equipment operating on the frequencies in the bands exclusively reserved for maritime mobile service.
- (c) Established for other services which the Government may decide from time to time.

3. Syllabus

The examination will be of oral and practical test consisting of following sections.

Part I :

- (I) Regulations
- (II) Procedure

Part II :

Technical

Part I Sec (i) : Regulations

- 1.1. Requirement of ship station licence and Operator's Certificate.
- 1.2. Documents to be carried by Radiotelephone ship station.
- 1.3. Secrecy of communication.
- 1.4. Use of wireless in Indian harbours and territorial waters.
- 1.5. Control of communication.
- 1.6. Authority of the master.
- 1.7. Unauthorised communication.
- 1.8. Measures against interference.
- 1.9. Hours of service, watch keeping.
- 1.10. Closure of stations.
- 1.11. Test transmissions.
- 1.12. Time-indication during communication.

- 1.13. Identification of stations.
- 1.14. Inspection of Mobile Stations.
- 1.15. International Distress frequencies.
- 1.16. Working frequencies in MF, HF and VHF Bands.

Oral questions will be asked to test candidates knowledge of Regulations. The examination will be conducted in Hindi or English or both.

Part I Section (i) : Procedure

- 2.1. Priority of Communications.
- 2.2. Transmitting technique, word spelling, figure code phraseology.
- 2.3. Call, reply, transmitting of messages, acknowledgement of receipt, end of communication.
- 2.4. Correction and repetitions.
- 2.5. Tests.
- 2.6. Distress, urgency and safety procedures.

Candidates will be required to carry out communications orally, associated with mobile stations over a synthetic radiotelephone circuit. Those desiring endorsement in respect of VHF communication only shall not be required to keep a written record of such communications.

The maximum number of marks is 100 for both Section (i) and (ii).

Part II : Technical

1. Candidates will be required to have knowledge of functions of various control of receiver/transmitter distinguish various terminals on the set—provide connections for antenna, power supply microphone, headphones etc., adjustment & tuning of receiver/transmitter on a particular frequency.

1.1. The test shall be conducted on a typical modern Radiotelephone set or otherwise orally which may be decided by Central Government from time to time.

Maximum number of marks is 100.

4. Candidates must secure at least 40% marks in each part to pass.

5. *Eligibility, Form of application etc.*

Among others, eligibility and form of application for admission to the examination, validity of 'licence to operate', fees for examination and renewal of licence to operate, etc. shall be same as provided for radiotelephone certificates in the Indian Wireless Telegraphy (Commercial) Radio Operators Certificates of Proficiency and Licence to operate Wireless Telegraphy Rules, 1954.