



INDIAN INSTITUTE OF HAMS, VU2IIH

II Floor, Gate No.2

Sree Kanteerava Outdoor Stadium

Kasturba Road, Bangalore-560 001.

Phone: 080-26664501, +91 94483 02677, 98441-73564

Email: ham7388@gmail.com, Web: www.indianhams.com

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AMATEUR STATION :

An Amateur Radio Station consists essentially of a transmitter with good frequency stability a communication receiver, SWR meter, dummy load and an earthing load.

The main functions of amateur station is service of self-training, inter-communication and technical investigations, aiding in emergency and civil defence work when called for and keeping a long record of contacts made. Amateur service is limited to messages of technical nature relating to tests and to remarks of personal character for which by reason of their unimportance, recourse to public communication network is not justified. It is absolutely forbidden for amateur stations to be used for transmitting international messages on behalf of third parties inspite of they being close relatives or friends.

IDENTIFICATION OF A STATION:

Since there are a number of amateur radio stations operating all over the world it is necessary to identify each particular station. An amateur station is identified by a call sign consisting of two parts. The first part identifies the zone of the station (or Country) and the later half identifies a particular station. The call sign consists of alphabets and numerals. For India the call sign assigned is VU2 AND VU3. So this forms the first half of all stations operating from India. The later half like VTM, FI, ITI, SIM etc., form the individual identification.

Example: GENERAL GRADE : VU2 followed by two or three alphabets & RESTRICTED GRADE : VU3 followed by three alphabets.

Every station must identify itself by its call sign at least once in 10 minutes, during transmissions. Call signs should not consist of the following combination of alphabets: SOS, XXX, TTT.

ABBREVIATIONS:

Courtesy beginning:

GM	Good Morning
GA	Good Afternoon
GE	Good Evening

Courtesy ending :

GN	Good Night
73	Best Regards
88	Love and Kisses

AA	All after
AB	All before
C	Yes
CFM	Confirm
CQ	General Call
DE	From
WA	Word after
WB	Word before
AR	End of Message

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AS	Wait – Used to indicate that you want the other operator to continue listening on your frequency and wait, for your transmission.
K	Go ahead (Invitation to Transmit), Used in between a contact or conversation when you have no objection for a third party to break in.
Nil	Nothing, I have nothing for you
OK	Okay – all right
R	Received perfectly
TU	Thank you
VA	End of transmission – final transmission from one station to another
KN	Used in between a contact (QSO) when you do not want a third station breaking in.
SK	Used at the end of contact (QSO) when you are willing to receive other stations
CL	Used at the end of contact and when you are closing down and will not receive any calls from any station.

COMMONLY USED ABBREVIATIONS:

OM	Old Man
YL	Young Lady
XYL	Wife of a ham
Harmonic	Children (Son / daughter of a Ham)
Fundamental	Father / Mother of a Ham
Dx	Foreign Countries / Distant stations
Hi	The telegraphic laugh
LL	Landline
Tx	Transmitter
Rx	Receiver
TRx	Transceiver
VOX	Voice Operated Switch
Xtal Control	Marriage
Handle	Name
Homebrew	Self-made wireless equipment
Shack	Wireless station of the radio amateur
Rag Chewing	On the air conversation
Signing off	Ending work with a particular station.
Pulling the big switch	Going off the air
Breaker	A radio amateur who wants to joining a contact that is already in progress.
Morning QTH	Work place of a Ham
Home QTH	Residence where ham stay

Standard Abbreviations:

WPC	Wireless planning Co-ordination Wing, Ministry of Communication and I.T.
SACFA	Standing Advisory Committee on Radio Frequency Allocation
ITU	International Telecommunication Union
UTC	Universal Time Control

Phonetic Alphabet

Letter	Word to be used	Spoken as	Letter	Word to be used	Spoken as
A	Alfa	Al Fah	N	November	No Vern Ber
B	Bravo	Brah Voh	O	Oscar	Oss Cah
C	Charlie	Char Lee	P	Papa	Pah Pah
D	Delta	Dell Tah	Q	Quebec	Keh Beck
E	Echo	Ech Oh	R	Romeo	Row Me Oh
F	Foxtrot	Foks Trot	S	Sierra	See Air Rah
G	Golf	Golf	T	Tango	Tang Go
H	Hotel	Hoh Tell	U	Uniform	You NeeForm
I	India	In Dee Ah	V	Victor	Vik Tah
J	Juliet	Jew Lee Ett	W	Whiskey	Wiss Key
K	Kilo	Key Loh	X	X-ray	Ecks Key
L	Lima	Lee Mah	Y	Yankee	Yang Key
M	Mike	Mike	Z	Zulu	Zoo Loo

Figure or mark	Code word to be used	Spoken as
0	Nada Zero	Nah Dah Zay Roh
1	Una One	Oo Nah Wun
2	Bisso Two	Bees Soh Too
3	Terra Three	Tay Rah Tree
4	Karte Four	Kar Tay Fower
5	Panta Five	Pan Tah Five
6	Soxi Six	Sok See Six
7	Sette Seven	Say tay Seven
8	Okto Eight	Ok Toh Alt
9	Nove Nine	No Vay Niner

INTERNATIONAL "Q" SIGNALS:

QRA	What is the name of your station?	The name of my station is
QRG	Will you tell me exact frequency (or that of...)?	Your exact frequency (or that of...) is Khz (or Mhz)
QRH	Does my frequency vary?	Your frequency varies
QRI	How is the tone of my transmission?	The tone of your transmission is... 1.Good, 2.Variable, 3. Bad
QRK	What is the readability of my signals (or those of...)?	The readability of your signals (or those of...) if... 1.Unreadable 2.Readable now and then 3.Readable, but with difficulty 4.Readable 5.Perfectly readable
QRL	Are you busy?	I am busy (or I am busy with....) Please do not interfere.
QRM	Are you being interfered with?	I am being interfered with.
QRN	Are you troubled by static?	I am troubled by static.
QRO	Shall I increase power?	Increase power
QRP	Shall I decrease power?	Decrease Power
QRQ	Shall I send faster?	Send faster(....words per minute)
QRS	Shall I stop slowing?	Send more slowly (...words per minute).
QRT	Shall I stop sending ?	Stop sending.
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRW	Shall I inform....that you are calling him on Khz or Mhz	Please inform.....that I am calling him of ....Khz or Mhz
QRX	When will you call me again?	I will call you again at.....on .....Khz or Mhz
QRY	What is my turn?	Your turn is number...(relates to communication).
QRZ	Who is calling me?	You re being called by.....on...Khz (or Mhz).
QSA	What is the strength Of my signals (or those...)?	The Strength of your signals (or those of....) is.... 1.Scarcely perceptible 2.Weak 3.Fairly Good 4.Good 5.Very good
QSB	Are my signals fading?	Your Signals are fading.
QSO	Can you communicate with....direct or by relay?	I can communicate with....direct (or by relay through...)
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSP	Will you relay to ....free of charge?	I will relay to .....free of charge.
QSU	Shall I send or reply on this frequency (or on Khz or Mhz) emissions of class...)?	Send ofr reply on this frequency (or on...Khz or Mhz) with emissions of class....
QSV	Shall I send series of V's on this frequency (or Khz or Mhz)?	Send a series of V's on this frequency (or....Khz or Mhz)
QSY	Shall I change to transmission or another frequency?	Change of transmission on an another frequency (or on...Khz or Mhz).
QSZ	Shall I send each word or group more than once	Send each word or group twice (or...times).
QTC	How many telegrams have you to send?	I have....telegrams for you (or for.....)
QTH	What is your position in Latitude and longitude	My position is.....latitude ....longitude
QTR	What is the correct time?	The correct time is .....hrs.
QUM	Is the distress traffic over?	The distress traffic is over

INTERNATIONAL RADIO REGULATIONS:

The following are the important radio regulations which must be observed while operating a station:

1. Radio Communication between two countries is forbidden if there is objection from the administration point of view.
2. When transmission between two countries are done, they must be purely of technical nature and its absolutely forbidden to use amateur station to transmit communications / messages on behalf of third parties.
3. Any person operating an amateur station must have proved that he/she is able to transmit and receive by ear a test in morse code signals.
4. Details regarding the personal and his operating station must be allowed to be verified by the administration, if necessary.
5. Maximum power shall be fixed by administration depending on technical qualifications of amateur and other condition, under which the station has to operate.
6. All general rules of the convention and precautionary regulations apply to amateur station also. It is important that frequency must be highly stable and free from harmonics.
7. During transmitting, a station must transmit its call sign at short intervals (atleast once in 10 minutes).

INTERFERENCE:

Interference is harmful and is unwanted radiation from the antenna. The transmitter may transmit the harmonic frequencies of the fundamental frequency of operation. A drift in oscillator frequency or stray oscillations also cause interference.

It is necessary to take all precautions to prevent interference to other stations which may be working. For this purpose normally a dummy load is connected and frequency is measured to monitor interference. Frequency tolerance of a transmitter means the maximum limit of frequency deviations allowed according to radio regulations. Harmonics radiation is radiation from a transmitter of frequencies which are integral multiples of the fundamental frequency. Before starting the transmission of a station it is essential to make sure that there is no transmission being made on the intended frequency, of transmission, to avoid interference. The operator should first listen carefully on the frequency he intends to transmit and then only start transmitting.

R-S-T SYSTEM

RST System (Code) is used to inform another amateur station as to how the signals transmitted by that station was received. RST stands for R. Readability S- Signal Strength T- Tone

Number codes for various conditions of R, S & T are used as

R – READABILITY	S –SIGNAL STRENGTH	T – TONE
1. Unreadable	1. Faint Signals,barely perceptible	1.Extremely rough hissing note
2. Barely readable, occasional words distinguishable	2. Very weak signals	2.Very rough a.c.note, no trace of musicality
3. Readable with considerable difficulty	3. Weak Signals	3. Rough low pitched a.c.note slightly musical
4. Readable with practically nodifficulty	4. Fair signals	4. Rather rough a.c.note moderately musical
5.Perfectly readable	5. Fairly good signals	5.Musically modulated note
	6. Good Signals	6.Modulated note, slight trace of whistle
	7. Moderately strong signals	7.Near d.c.note, smooth ripple
	8. Strong signals	8.Good d.c.note, just a trace of ripple
	9. Extremely strong signals	9.Purest d.c.note (if the note appears to be crystal-controlled, add an X after the appropriate number)

- Tone (T) is used only to describe CW signals, it is not used for voice signals.
- If you transmit `UR RST 538'. It means that the received signal is perfectly readable, weak signal and a good DC note with a trace of ripple.

Authorized Frequency Bands, Power & Emission :

Category of license	Frequency	Emission	Max DC input power
Amateur Wireless Telegraph Station Licence - RESTRICTED GRADE	144-146 Mhz 434-438 @ Mhz 50 - 54 Mhz	F1B, F2B, F3E, F3C	10 Watts (Terrestrial service only authorized)
	1820-1860* Khz 3500-3700* Khz 3890-3900* Khz 7000-7200Khz 14000-14350Khz 18068-18168\$ Khz 21000-21450Khz 24890 -24990\$ Khz 28000-29700Khz	A3E, H3E, J3E, R3E, A1A	50 Watts
Amateur Wireless Telegraph Station Licence - GENERAL GRADE	144-146 Mhz 434-438 @ Mhz 50 - 54 Mhz	F1B, F2B, F3E, F3C	25 Watts
	5725-5840 @ Mhz		
	1820-1860* Khz 3500-3700* Khz 3890-3900* Khz 7000-7100Khz 14000-14350Khz 18068-18168\$ Khz 21000-21450Khz 24890 -24990\$ Khz 28000-29700Khz	A1A, A2A, A3E, H3E, J3E, R3E, F1B, F2B, F3E, F3C, A3C, A3F,	400 Watts

- On primary shared basis as per the relevant provision of Radio Regulations
- \$ Authorization is on non-interference and non protection basis.
- @ On Secondary basis as per the relevant provisions of Radio Regulations.

Note:

- All the allocation subject to the relevant provisions of the Radio Regulations. Amateur satellite service is permitted for General Grade in the appropriate sub bands in accordance with Radio Regulations and in those cases the maximum output RF power (eirp) is 30 dBw.
- The above authorization is subject to site clearance as per the procedure prescribed the Standing Advisory Committee on Radio frequency allocation (SACFA) as applicable.
- For A3F emission, the transmission shall be restricted to call-sign of the station, location and other particular of the station. They shall be limited to point to point test transmission employing a standard interface and scanning with a bandwidth not more than 4 Khz.
- (iv) DC input power is the total direct current power input to the final stage of the transmitter.

RADIATION: The outward flow of energy from any source in the form of radio waves.

EMISSION: Radiation produced, or the production of radiation, by a radio transmitting station. For Example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a radiation.

CLASS OF EMISSION:

The new emission code now consists of three elements two letters separated by a number. This is a set of characteristics of an emission, designated by standard symbols, e.g type of modulation of the main carrier, modulating signal, type of information to be transmitted.

First symbol indicates modulation of carrier	Second letter a number denoting nature of modulating signal	Third symbol indicating the type of information.
N – Un modulated A - Double side band B - Independent side band C - Vestoigal side band F - Frequency Modulation G - Phase Modulation J - Single side band suppressed carrier R - S.S.S. reduced carrier K - Amplitude modulated pulse train L - Width modulated pulse train M- Phase modulated pulse train P - Unmodulated pulses Q - Angle modulated pulse train	0. No modulating signal single channel 1. Digital information (yes) 2. Single channel using modulating sub carrier 3. Single Channel having analog data 4. More than one channel with digital data. 5. More than one channel. 6. More than one channel with analog data 7. More than one channel with both analog and digital data.	N- no information A - Telegraphy Manual reception B- Telegraphy automatic reception C-Facsimile D-Data transmission E-Telephony F- T.V. W-Combination of two or more of the above.

Till now SSB suppressed carrier was called A3J. Now it is J3E, CW was A1, now it is A1A if intended to be received by human ears. i.e. non-automatic means. Frequency and Phase modulation of voice signals are now F3F and G3F respectively.

NOMENCLATURE OF FREQUENCY AND WAVE LENGTH:

Frequency Band	Frequency range (Lower limit exclusive) (Upper limit inclusive)	Wave length	Name range
VLF	10 - 30 KHz	30000 - 10000 m	Myriametric waves
LF	30-300 KHz	10000-1000m	Kilometric waves
MF	300-3000 KHz	1000-100 m	Hectometric waves
HF	3-30 Mhz	100-10m	Deccametric waves
VHF	30-300 Mhz	10-1m	Metric waves
UHF	300-3000 Mhz	1m -10 cm	Decimetric waves
SHF	3000 - 3000 Mhz	10-1 cm	Centrimetric waves
EHF	30000-300000 Mhz	1 - 0.1 cm	Millimetric waves

OPERATING PROCEDURES OF AMATEUR STATION:

1. GENERAL CALL:

This is a call used when you are interested in working any station.

CQ CQ CQ DE VU2FI VU2FI VU2FI K

CQ = General Call DE = From VU2FI = Call sign of the the caller K = Go ahead

2. GENERAL DX CALL:

This is used when you are interested in working only with a foreign station (distant station).

CQDX CQDX CQDX DE VU2FI VU2FI VU2FI K

3. DIRECTIONAL CALL:

This is used when you are interested in calling or to work with a station from a particular direction.

CQJA CQJA CQJA DE VU2FI VU2FI VU2FI K

4. INDIVIDUAL CALL:

This is used when you are interested in working a particular station.

VU2VTM VU2VTM VU2VTM DE VU2FI VU2FI VU2FI AR.

A sample communication between two Hams is given below:

"CQ CQ CQ DE VU2VTM VU2VTM VU2VTM K"

VU2VTM is giving a call on the frequency inviting any station to reply.

DE means 'FROM' and K means 'go ahead'.

"VU2VTM VU2VTM DE VU2HSM VU2HSM KN"

VU2HSM has replied to VU2VTM and asked him to continue. KN means that only the addressed station should go ahead and transmit.

"VU2HSM DE VU2VTM R BT TNX FOR CALL BT UR RST IS 599 BT NAME HR IS MARCUS EST QTH SOUTH BANGALORE IN KENGER BT WX HR IS WARM ES TEMP 32 C BT RIG IS KENWOOD EST ANT IS A DIPOLE BT Hw? VU2HSM DE VU2VTM KN"

(VU2VTM has thanked VU2HSM and has given details about his name, location, weather and equipment being used. The signal report is RST system is also given. R means roger, UR means 'your', ES means `and' HW? Means `How do your copy me?' BT is a sign for separating two successive sentences).

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"VU2VTM DE VU2HSM R" BT UR RST IS ALSO 599 BT NAME HR IS MANI ES QTH IS ALLEPEY IN KERALA BT WX HR IS WARM ES SUNNY WITH TEM ABT 35 C bt RIG IS HOMEBREW ES ANT IS INV V BT VU2VTM DE VU2HSM KN".

(VU2HSM has given information about himself. HOMEBREW means that the equipment is home made).

"VU2HSM DE VU2VTM R BT TNX FOR THE QSO DR MAIN DT WILL SEND QSL BT 73 BT VU2HSM DE VU2VTM".

(VU2VTM has thanked VU2HSM and promised to send a QSL card wishing 73 (Best regards).

VU2VTM DE VU2HSM R BT GB DR MARCUS BT 73 EST CU AGN BT VU2VTM DE VU2HSM SK

(VU2HSM has said good bye, CU AGN means `see you again', SK is a sign for end of contact).

In radio telephony, actual conversation will take place but abbreviations are not very important in radio telephony because they serve no purpose in helping to save time. The use of phonetic codes is must to make yourself intelligible. "PLEASE NOTE TO USE ONLY AUTHORISED PHONETICS.

BREAKING IN PROCEDURE:

If two station `A' and `B' are in conversation, and if a station `C' wants to enter in between a contact (QSO) between two stations A & B, when a over is passed by either of the station to another station, then C will have to send the signal `BK' followed by its call sign and wait till the QSO is pushed over. Breaking signal should not be long and if either station A or B does not answer your break-in, you must wait till their QSO is over.

Example : BK DE VU2VTM

QSL CARDS:

- Final confirmation or acknowledgement for contact made (proof).
- You can design your own QSL card.
- Should contain information like date and time, callsign of the station, contact, mode of transmission, details regarding Tx, Rx and antenna, power used, RST report of the station contacted etc.

QSL BUREAU:

- QSL bureau is a club / organization receives and distribute QSL cards overseas hams.
- Exhorbitant postal rates can be avoided if it is sent through QSL bureau.

SPECIAL CALLS AND SIGNAL:

1. Standard Time Signal:

It is signal sent by any authorized station to correct the time (QTR)

QTR 1700 hrs. GMT / IST (DAH)

The time is followed by a long dash and the dash is broken at the exact moment when the second hand crosses the time indicated.

2. Distress Signal:

- emergency signal which indicates that a ship, aircraft or other vehicle is threatened by grave and imminent danger and requests immediate assistance

Radio telegraphy: SOS SOS SOS DE followed by identification of the mobile station in distress, position, nature of the distress and the kind of assistance, any other information which might facilitate the rescues.

Radio Telephony: MAY DAY MAYDAY MAYDAY

International distress frequency is 500 khz

Telegraphy: 490 – 510 Khz, Telephony: 2170 – 2194 Khz.

Note: There is no ending signal for a distress message.

- Distress call shall have absolute priority over all other transmissions.
- Switch off his transmitter and listen on the receiver carefully for the distress message.
- Inform to the concerned authorities or nearest police station.
- Station in distress or the station in control of the distress traffic may impose silence or any or all the stations which interfere with the distress traffic. In radio telegraphy, the code QRT followed by SOS is used followed by the callsign.

3. URGENCY SIGNAL:

- it indicates that the calling station has a very urgent message to transmit concerning the safety of ship, aircraft, vehicle or a person.
- Urgency signal has a priority over all other communication except the distress call.
- Stations which receive the urgency signal will stop transmitting and listen for at least 3 minutes and then resume their normal work.

XXX XXX XXX in radio telegraphy

PAN PAN PAN in radio telephony.

4. SAFETY SIGNAL:

Station transmitting should indicate the safety of navigation or giving a meteorological warning.

- Listen to the message until they are sure that message does not concern them.
- No transmission is made likely to interfere with the message.

Radio Telegraphy: TTT TTT TTT

Radio Telephony the word "SECURITE"

5. TEST SIGNAL:

V.....s de VU2FI

- Consists of a series of Vs i.e. Di Di Di Dah followed by call sign of the station sending the test signals.
- These signals are sent either for the adjustments of a transmitter before making a call or a receiver or any other test purpose.
- The test signal should not exceed 30 seconds and it should not interfere with any other service or station.
- If it is more than 30 seconds, dummy load is used.

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THE INDIAN WIRELESS TELEGRAPH (AMATEUR SERVICE) RULES,
1978 as amended by The Indian Wireless Telegraphs (Amateur Service)
Amendment Rules, 1984 - G.S.R.No.1225/84,
Amendment Rules, 2005 – GSR 280(E) dt 1-4-2010

G.S.R. No. 1499/78.- In exercise of the powers conferred by section 4 and section 7 of the Indian Telegraph Act, 1885 (13 of 1885), the Central Government hereby makes the following rules for the conduct of wireless telegraphs in the amateur service, established, maintained, and worked by persons licensed under the said Act.

1. Short title and commencement:

- (1) These rules may be called the Indian Wireless Telegraphs (Amateur Service) Rules, 1978.
- (2) They shall come into force on the 17th October, 1984.

2. Definitions :

In these rules, unless the context otherwise requires,-

- a) 'Act' means the Indian Telegraph Act, 1885 (13 of 1885)
- b) 'amateur service' means a service of self training, inter-communication and technical investigations carried on by amateurs that is, by persons duly authorised under these rules interested in radio technique solely with a personal aim and without pecuniary interest; 'amateur station', and 'station' shall have the meaning respectively assigned to them in the Convention;
- c) 'Amateur Radio Beacon' means a station in the Amateur Service having transmitter (s) emitting carrier wave along with identification signals at regular interval. Such beacons can be directional or non-directional;
- d) 'Amateur Station', and "Amateur Satellite Service" 'Station' shall have the meaning respectively assigned to them in the Convention;
- e) 'Convention' means the International Telecommunication Convention, Malaga=Torremolinos, 1973, for the time being in force and the Radio Regulations and the Additional Radio Regulations annexed thereto but does not include any portion of the said Convention or Regulations regarding which the Central Government makes any reservation;
- f) 'Licence' means a licence granted under section 4 of the Act for an amateur wireless telegraph station.

3. Necessity for licence :

No person shall establish, maintain and work an amateur wireless telegraph station except under and in accordance with the terms and conditions of an appropriate licence under these rules.

4. Categories of licence :

There shall be TWO categories of licences, namely :

- (i) Amateur Wireless Telegraph Station Licence (GENERAL)
- (ii) Amateur Wireless Telegraph Station Licence, (RESTRICTED)

5. Eligibility for licence :

- (1) A licence may be granted subject to such conditions contained in Annexure I to these rules -

(i) to a person,-

- (a) who is a citizen of India;
- (b) who is not less than 18 years of age;
- (c) who qualifies the Amateur Station Operators' Examination for the award of licence or holds either of the following certificate of proficiency, namely:
 - (i) Radio-communication Operators' General Certificates;
 - (ii) First or Second Class Radio-telegraph Operators' Certificate;

Provided that the holder of a Special Radio Telegraph Operator's Certificate may also be considered eligible for the award of Amateur Wireless Telegraph Station Licence RESTRICTED.

(iii) to a bonafide amateur radio society, club or a school, college, or an institution or a university in India, which has the aim of investigations in the field of radio or the training of persons in radio communication techniques.

Provided that the licence shall be issued in the name of an authorized official of the society, club, school, college, institute or a University in India holding a category of licence appropriate to the transmissions to be conducted by the station including amateur radio beacon transmission.

- (2) Notwithstanding anything contained in sub-clause (b) of clause (i) of sub-rule (1), the Central Government may grant, to bonafide experimenters between the ages of 14 and 18 years, Amateur Wireless Telegraph Station Licence GENERAL and to those between the ages of 12 and 18 years, Amateur Wireless Telegraph Station Licence, Grade RESTRICTED.

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(3) Notwithstanding anything contained in sub-clause (c) of clause (i) of sub-rule (1), the Central Government may recognize, subject to any conditions it may prescribe from time to time, such other radiotelegraph operators' certificates or Amateur Station Operators' Certificates as are issued by a competent authority in any other country as equivalent to qualifications referred to in aforesaid sub-rule for the purpose of grant of licence under these rules.

6. An application for licence :

An application for the grant of licence from:

- (a) an individual, or
 - (b) an Amateur Radio Society or club or a school, college or an institute or a University in India-
- shall be made to the Central Government in Annexure II or Annexure III respectively to these rules, shall be made to the Central Government in Annexure II or Annexure III respectively to these rules, together with all the subsidiary forms and documents duly filled in and completed in all respects.

7. Eligibility for admission to amateur station Operators Examination :

No person shall be eligible for admission to an examination for the grant of licence unless :-

- (a) such a person fulfils the provisions contained in sub-clauses (a), (b) and (c) of clause (i) of sub-rule (1) of rule 5;
- (b) such person pays the fees on the following scale, namely :-
 - (i) Amateur Wireless Telegraph Station Licence (GENERAL)..... Rs. 100.00
 - (ii) Amateur Wireless Telegraph Station Licence, (RESTRICTED)..... Rs. 100.00
- (c) a period of atleast one month has elapsed since he last appeared in an examination and failed

8. Examinations :

- (1) The examinations for the grant of a licence shall be held at a place and on a date as may be notified by the Central Government from time to time.
- (2) An application for licence in Annexure II or, as the case may be, in Annexure III to the rules shall be submitted not later than the 15th of the month preceding that in which it is desired to take the examination.
- (3) 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 licence under these rules:

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

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

Provided that the Central Government may, pending the cancellation of the licence, suspend or endorse such licence :

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.

9. Grant of licence :

Every category of licence shall be in the form set out in Annexure IV to these rules.

10. Observance of conditions of licence, Convention and rules under the Act :

- (1) Every licensed amateur wireless telegraph station shall be established, maintained and worked in accordance with -
 - (a) the conditions contained in Annexure I to these rules;
 - (b) the provisions of the Convention;
 - (c) the rules made by the Central Government under section 7 of the Act for the conduct of wireless telegraphs in so far as they are applicable.

(2) Notwithstanding sub-rule (1) the Central Government may modify, vary, cancel or revoke any of the conditions of licence contained in the said Annexure I at any time either by specific notice in writing to the licensee, or by means of a general notice published in the Official Gazette or in a newspaper published in New Delhi.

(3) The licensee shall at his own expense, give effect to any variations in the conditions of licence,

11. Period of validity :

A licence granted under these rules shall be issued for a period of 2 years or 5 years, as the case may be, commencing on the date of issue of the licence and expiring on the last day of the month proceeding the month of issue.

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12. Fee for licence:

A licence fee on the following scale shall be payable to the Central Government on receipt of instructions from that Government and in the manner directed by it:-

CATEGORY OF LICENCE		
	20 YEARS	LIFE TIME
(i) Amateur Wireless Telegraph Station Licence (GENERAL)	1000.00	2000.00
(ii) Amateur Wireless Telegraph Station Licence (RESTRICTED)	1000.00	2000.00

(2) The licence fee shall not be refundable on ground of licensee's inability to establish or make use of the licensed Amateur Wireless Telegraph Station or for adjustment towards higher category of licence.

13. Authorised frequency bands, power and emission :

A holder of licence shall use, as appropriate to the licence, such frequency bands, power and classes of emission as are set out in Annexure V of these rules : Provided that the Central Government may by special or general order make changes in the usage of frequency bands, power and types of emission where that Government is satisfied, that it is expedient to do so, keeping in view, among others, the provisions of the Convention, need for enforcement of better technical standards in respect of equipment and national and international radio interference pattern.

14. Renewal of licence :

- (1) On the expiry of the validity of a licence, it may be renewed for a period of two years if the licensee,-
 - (a) makes an application for renewal at least two months before the date of expiry of the licensee,
 - (b) has actively operated his station during the past two years prior to the date of expiry of his licence and provides a certificate to the effect that he has made contacts with other amateur stations on atleast 40 occasions per year; and in the case of short Wave Listener has intercepted amateur station on at least 40 occasions per year.
 - (c) pays fees on the following scale, namely :-

CATEGORY OF LICENCE	20 YEARS
(i) Amateur Wireless Telegraph Station Licence (GENERAL)	1000.00
(ii) Amateur Wireless Telegraph Station Licence (RESTRICTED)	1000.00

(2) The licence fee shall not be refundable on ground of licensee's inability to establish or make use of the licensed Amateur Wireless Telegraph Station or for adjustment towards higher category of licence.

(3) The document showing the renewal of licence issued by the Central Government shall be kept along with the licence to which it refers.

(4) It shall not be obligatory for the Central Government to issue a notice that the licence is due for renewal.

15. Surcharge for late renewal :

In case the holder of a licence does not apply for its renewal prior to the date of expiry of the licence referred to in sub-rule (1) of rule 14, 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.100/- for every half-year or part thereof. The licence in such a case, shall be renewed from the date of expiry of the licence..

16. Register for wireless telegraphy apparatus :

Every licensee shall maintain a register in respect of all wireless telegraphy apparatus established, maintained and worked by him at the amateur station in the form set out in Annexure VI of these rules.

17. Location of Amateur Station :

The location of the amateur station shall be specified in the licence along with the usual residence of the licensee endorsed therein and it shall be operated only from the place so fixed. Provided that the Central Government may, permit the change of location if the licensee applies for it in writing giving particulars of the change and submits the license for endorsement, and pays a fee of rupees TWO HUNDRED.

18. Portable and mobile amateur station :

Without prejudice to rule 17, the Central Government may in addition to an amateur station licensed for a specified location issue a special authorisation to establish, maintain and work an amateur station as a portable station or a mobile station fixed on board a motor vehicle for a specific period in special occasions like exhibitions and jamborees or for specific technical investigations in radio if-

(i) application for such authorisation is made well in advance indicating, among others, the specific period for which the authorisation is required, nature of investigations or details in regard to occasion as the case may be, and area of operation ; (ii) the applicant holds an Amateur Wireless Telegraph Station Licence GENERAL; (iii) the applicant pays an additional fee of Rs.200/-.

(2) The special authorisation shall, in addition to the conditions specified in rule 10, be subject to following, namely:-

(i) The special authorisation shall not be issued for a period more than 90 days. (ii) The licensee's amateur station at the fixed location and the mobile station shall not communicate with each others; (iii) the suffix 'MO' shall be added to the callsign already authorised to the licensee's amateur station at the fixed location for use by the portable or mobile station. Such callsign shall be followed by the location of the station. (iv) Such other conditions as the Central Government may determine from time to time.

(3) The special authorization may be withdrawn or the conditions contained therein varied at any time by the Government.

19. Amateur Station on board ship :

(1) Without prejudice to rule 17, the Central Government may on receipt of an application authorise establishment, maintenance and working of an amateur station on board a ship registered in India. Applications for such authorisation shall be accompanied by a written approval of the master or owners of the ship concerned.

(2) The establishment, maintenance and working of amateur stations on board ships shall, in addition to the conditions specified under rule 10, be subject to such other conditions as the Central Government may determine from time to time and such conditions, among others, shall include the following, namely :-

(i) The amateur station on board ship shall be operated only while the ship is in International waters or Indian territorial waters. Its operation within the territorial waters of another country shall be in conformity with laws and regulations of the country concerned. (ii) It shall not be operated whilst the ship is in any harbour in India.

(iii) The callsign allotted to such stations shall have suffix 'MS' followed by the callsign of the ship in case of radiotelegraphy or the official name of the ship in case of radiotelephony. (iv) The amateur station on board a ship shall discontinue operation at any time on request of an officer of the Central Government, the Master or Radio Officer of the ship or any land station.

20. Loss and Issue of Duplicate of Licence and Document showing the Renewal of Licence :

(1) A person whose Licence or the document showing the renewal of licence has been lost, mutilated or destroyed shall notify the same to the Central Government. An application in Annexure VII of these rules for the duplicate shall be made to the Central Government embodying a statement of the circumstances involved in the loss, mutilation or destruction of the licence or the document showing the renewal of licence for which a duplicate is required. If the licence or the document showing the renewal of licence has been lost, the applicant must state the circumstance in which it was lost and the 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. The mutilated licence or the document showing the renewal of licence for which the duplicate is required should be forwarded alongwith the application for cancellation.

(2) The Central Government may issue duplicate copy of any licence or the document showing the renewal of the licence and the following charges shall be levied for such issue-

- (i) For duplicate of licence Rs. 100.00
- (ii) For duplicate of the document showing the renewal of licence..... Rs. 100.00

21. Revocation of licence :

(1) The Central Government may, at any time, revoke the licence-

(i) On the breach of any of the conditions of licence contained in Annexure I; or

(ii) In default of payment of any fees payable under these rules :

Provided that, before revoking a licence, the licensee shall be given a reasonable opportunity of making a representation against the action proposed to be taken.

(2) The licensee shall not be entitled to any compensation arising out of revocation of his licence nor will any part of the fees paid for the licence shall be refunded for the period a licence stands revoked.

22. Transfer of licence :

A licence shall not be transferable :

Provided that the Central Government may permit the transfer of a licence granted to an authorised official of an amateur radio society or club or a school, college or an institute or a University in India in favour of his successor if such successor holds a category of licence appropriate to the transmissions to be conducted by the amateur station.

23. Operation of licensed amateur station :

No person other than the licensee shall be emitted to operate the licensed amateur station :

Provided that -

(a) in the presence of the licensee himself, the station may be operated by an other person holding a valid licence of comparable or higher category. The licensee, however, shall be personally responsible for the observance of these rules as if the station is operated by him.

(b) in case of a licence issued to an authorised official of an amateur radio society or club or a school, college, or an institution or a University in India, the station may also be operated by a person who holds a licence of equivalent or higher category with the prior permission of the Central Government in writing; if the licensee keeps personal surveillance over the operation of the station. The licensee shall be responsible for the observance of these rules.

24. Surrender of licence :

A licence which is revoked or which has become invalid and licensee does not desire to renew it shall be surrendered to the Central Government for cancellation and record.

25. Dual holding of licence :

No person shall be granted more than one licence at the same time :

Provided that the Central Government may exempt a person, holding a licence in his name for amateur radio society or a school, college or an institute or a university in India, from the operation of this rule.

26. Admission of foreign national to examination and grant of licence :

(1) Notwithstanding anything contained in these rules, the Central Government may, subject to such terms and conditions as it may impose from time to time, admit a person, who is not a citizen of India, to an examination for the grant of a licence or grant him a licence if otherwise qualified.

(2) The conditions under sub-section (1) shall, among others, include the following, namely :-

(i) the country of which the applicant is citizen, grants reciprocal facilities to Indian nationals :

Provided that it shall not apply where the Central Government considers that reciprocal facilities are not necessary ;

(ii) the applicant is above the age of 18 years;

(iii) the applicant's stay in India is not likely to be less than one year from the date of application.

(iv) the applicant is a holder of an appropriate category of amateur station operator's certificate or licence issued by a competent authority in any other country and recognised by the Central Government.

(v) the licence under this rule shall be initially granted for a period of one year or for the period of validity of visa, for which the applicant's passport is endorsed, whichever is less.

27. Penalty for breach of these rules :

Any breach of these rules, other than a breach which is an offence under section 20 or 21 of the Act, shall be punishable with fine which may extend -

(i) when the person is licensed under the Act, to one thousand rupees and in the case of continuing breach a further fine of two hundred rupees for every day after the first during the whole of any part of which the breach continues;

(ii) when a servant of the person so licensed or another person is punishable for the breach one fourth of the amounts specified in clause (i).

28. Repeal and saving :

(1) On the commencement of these rules, the Indian Wireless Telegraphy (Amateur Service) Rules, 1958, shall cease to be in force.

(2) Notwithstanding such repeal,-

(a) Where before such commencement any person has passed the Amateur Station Operators' Certificate GENERAL or RESTRICTED Examination, such person shall not be required to pass any such examination under these rules;

(b) Where, before such commencement any person was granted Amateur Wireless Telegraph Station Licence Grade I, or any such Licence was renewed and the period for which such Licence was granted or renewed extends beyond the commencement of these rules, then, such Licence shall continue to be in force for the period specified in the Licence.

ANNEXURE I CONDITIONS FOR THE CONDUCT OF AMATEUR TELEGRAPH STATION

(See rules 5 & 10)

I. Use of the Amateur Station :

(1) The amateur station shall be used as part of self training, intercommunication and technical investigations in radio techniques solely with a personal aim and without pecuniary interest :

Provided that when the station is licensed to an amateur radio society or club, or a school, college or an institute or a University, the use of the station "shall be" confined to technical investigation and training in radio communication techniques without pecuniary interest.

(2) The station may also be used for the purpose of receiving transmissions in the Standard Frequency Service to facilitate operation of the station within the authorised frequency bands.

(3) Except as provided in these rules, the licensee shall not assign, under-let or otherwise dispose off or admit any person to participate in the benefits of the licence.

II. Messages :

(1) (a) Radio communications may be exchanged with other stations similarly authorised. The amateur stations are forbidden to communicate with amateur stations of countries whose administrations have notified the International Telecommunication Union of their objection to such radio communications.

(b) Transmissions shall be made in plain language and limited to messages of a technical nature relating to tests and to remarks of personal character (excluding business affairs or transactions) in which the licensee, or the person with whom he is in communication, are directly concerned and for which, by reason of their unimportance, recourse to the public telecommunication service is not justified.

(c) Special recordings for reproduction sinusoidal tone or tones within the audio frequency spectrum which may be either constant or steadily changing in frequency may be used.

(2) The licensee is forbidden to transmit,-

(a) messages like the reproduction of broadcast programmes or tape recordings or transmissions of entertainment value or music;

(b) false or misleading calls, or signals, news, advertisements, communications of business, statements on topics of political or industrial controversy;

(c) superfluous signals or any matter which is indecent or of obscene character or of a seditious tendency or which is grossly offensive or such as is likely to arouse racial, religious, or communal animosity;

(d) messages for pecuniary reward or any messages for, or on behalf of third parties;

(3) Notwithstanding clause (a), sub-condition (1) and clause (d), sub-condition (2) the licensees in case of failure of normal telecommunication facilities, are permitted to handle third party messages, pertaining to natural calamities such as earthquake, floods, cyclones and wide spread fires, originating from and addressed to a competent civil authority namely, (a) District Magistrates or Deputy Commissioners or Collectors of the district and (b) any other officer authorised by authorities mentioned at (a) above. The licensee shall inform by letter addressed to the licensing authority regarding the use of his amateur station for such purposes on each such occasions.

III. Frequencies, Emissions and Power :

The amateur station shall be operated on frequencies that are within the frequency bands authorised to respective categories of licenses under rule 13 and on such classes of emissions and power not exceeding that specified in the said rule.

IV. Frequency Control and Measurement :

(1) The transmitting apparatus shall be tuned as accurately as possible to ensure that no energy is radiant on any frequency outside the limits of the authorised frequency bands.

(2) The licensee shall have at the licensed amateur station a reliable frequency measuring equipment to verify, each time the frequency of the transmitter is changed and whenever it is necessary to check the transmitted frequency, the emissions are within the authorised frequency bands. The licensee shall take all steps necessary to maintain the accuracy of the frequency measuring equipment.

V. Non-Interference :

(1) The amateur station shall be so designed, constructed, erected, maintained and worked as not to cause interference with any wireless telegraph service functioning, within or without India, in accordance with the provisions of the Convention or the wireless signaling between any fixed, land or mobile stations of Indian Land, Naval or Air Force or between such stations and any station abroad :

Provided that in the event of interference being caused by the station the licensee shall discontinue or restrict transmissions, pending adjustment of the equipment, on request from,-

(a) the Central Government; or (b) any land station.

(2) The licensee shall deploy all necessary means to ensure that the radiated frequency is free from harmonics, key clicks, hum and other forms of spurious emissions.

(3) The licensee shall ensure that the transmitter is not over modulated.

(4) The use of class B emissions (damped waves) is forbidden.

VI. Log (Dairy of the radio service) :

(1) A chronological record of all transmissions emanating from or received at the amateur station shall be kept in bound book (not loose-leaf) showing the following :

(a) Date and time of each transmission;

(b) a summary of the communications exchanged;

(c) a brief description of the experiments and tests undertaken;

(d) the call sign of station or stations with which messages have been exchanged, times and type of emission employed in each case;

(e) time of opening and closing down the amateur station;

(f) in case of portable or mobile amateur station the particulars of temporary location.

(2) All times in the log shall be stated in the Indian Standard Time.

(3) No gaps shall be left between entries in the log and they shall be made and initialed at the time of receiving and transmitting.

(4) In case the station is operated by a person other than the licensee (see rule 23), the licensee shall ensure that log is signed by that person indicating his name, call sign and licence number.

(5) Licensee shall preserve the log for a period of one year from the date of last entry therein before it is destroyed: Provided that no log shall be destroyed for such further period as the Central Government may direct.

(6) The form of log is shown in the Table attached to these conditions.

VII. Wireless Telegraphy Apparatus :

(1) The amateur station shall be equipped for reception as well as transmission except in the case of Short Wave Listeners Amateur Wireless Telegraph Station Licence when it shall be equipped for the former only.

(2) The Wireless telegraphy apparatus and other accessory equipment used or intended to be used by the licensee shall be so arranged as not to endanger the safety of licensee or other persons.

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- (3) The wireless telegraph apparatus shall be kept in a safe condition and housed in such manner as to preclude access to unauthorised persons.
- (4) The transmitter shall be of a type that has a frequency stability comparable to that of a crystal control.
- (5) Meters of standard accuracy shall be installed to measure the d.c. power input to the anode circuit of the final radio frequency stage of the transmitter.
- (6) The aerial used or intended to be used shall be so erected, fixed, or placed as not to cross above or fall on to any power, telegraph or telephone line.

VIII. Secrecy of Correspondence :

If any message which the licensee is not entitled to receive is, nevertheless received, the licensee shall not make known or allow to be made known its contents, its origin or destination, its existence or the fact of its receipt to any person (Other than duly authorised officer of the Central Government or a competent legal tribunal) and shall not reproduce in writing, copy or make any use of such message or allow the same to be reproduced in writing, copied or made use of.

IX. (1) General Radiotelegraph and Radiotelephone Procedure :

- (1)(a) Before transmitting, the station shall take precautions to ensure that its emissions will not interfere with transmissions already in progress. If such interference is likely the transmission shall not commence till there is an appropriate break in the communications in progress.
 - (b) The call sign endorsed in the licence shall be sent for identification at the beginning and at the end of each period of transmission. When the period of transmission exceeds 10 minutes the call sign shall be repeated. Licensee shall not make transmission without identification or with false identification.
 - (c) Prolonged calls and transmissions shall be avoided.
 - (d) When it is necessary to spell out call sign, certain expressions, difficult words, abbreviations, figures etc., the phonetic alphabet and figure code given in the Convention shall be used.
- (2) Call and Reply Procedure
 - (a) The call shall consist of -
 - the call sign of the station called not more than three times;
 - the word DE (in case of radiotelegraphy) and the words "This is" (in case of radio telephony).
 - the call sign of the calling station, not more than three times.
 - (b) The reply to call shall consist of -
 - the call sign of the call sign station, not more than three times;
 - the word DE (in case of a radiotelegraphy) and the words "This us" (in case of radio telephony).
 - the call sign of the station called, not more than three times.
 - (c) The call may be sent three times at intervals of two minutes; thereafter it shall not be repeated until an interval of 10 minutes during which the operator shall listen in the frequency band in which the call has been made.
 - (d) In case of general call to all stations the signal `CQ' (in case of radiotelegraphy) and the words `Hello all stations' or the signal `CQ' (in case of radiotelephony) shall replace the call sign of the station called in the calling procedure.

(3) End of Transmission and Work :

- (a) Transmission of a message shall be terminated by the signal AR (in case of radiotelegraphy) and the word `Over' (in case of radiotelephony).
- (b) The end of work between two stations shall be indicated by each of them by means of signal VA (in case of radiotelegraph) and by the word `OUT' (or VA spoken as Victor Alfa) in case of radiotelephony.

(4) Tests :

- (a) When it is necessary to make test signals either for the adjustment of a transmitter or a receiver or for any experiment, such signals shall not be continued for more than 30 seconds and shall be composed of series of VVV followed by the call sign of the station emitting the test signals. In case of radiotelephony series of VVV shall be replaced by the figures 1,2,3,4..... spoken in the figure code.
- (b) For tests exceeding 30 seconds an artificial aerial shall be used.
- (c) Emission of carrier wave is forbidden unless such wave is subjected to intelligible modulation.

X. Inspection :

(1) Any officer authorised by the Central Government in that behalf in writing by them, may at all reasonable times enter the station solely or jointly with any other person or persons for the purpose of inspecting and may inspect, examine or test any apparatus conduct of such inspections and tests and making available the licence, the station log or other records for examination by the inspecting officer.

(2) The licensee when called upon to do so by the Central Government shall arrange to forward the licence, the log book, or any other record or data for examination by that Government.

XI. Powers to take possession of the Amateur Station and to order interception of messages :

(1) On the occurrence of any public emergency, or in the interest of the public safety, the Central Government or a State Government or any officer specially authorised in this behalf by the Central Government or a State Government may, if satisfied that it is necessary or expedient so to do, take temporary possession (for so long as the public emergency exists or the interest of the public safety requires the taking of such action) of the Amateur Station.

(2) On the occurrence of any public emergency, or in the interest of the public safety, the Central Government or a State Government may, if satisfied that it is necessary or expedient so to do in the interests of the sovereignty and integrity of India, the security of the State, friendly relations with foreign state or public order or for preventing incitement to the commission of an offence, for reasons to be recorded in writing, by order, direct that any message of class of messages relating to any particular subject, shall not be transmitted or received or shall be intercepted by the station or shall be disclosed to the Government making the order or an officer thereof mentioned in the order.

(3) The licensee shall not be entitled to any compensation in respect of the exercise of the powers conferred by sub condition (1) and (2) or this condition.

XII. The licensee shall indemnify the Central Government against all actions, claims and demands which may be brought or made by any person, body corporate or company in respect any injury arising from any act licensed or permitted by the licence.

XIII. A copy of the Indian Wireless Telegraphs (Amateur Service) Rules., 1978 with further amendments shall be kept at the Amateur Station.

MORSE CODE:

Morse Code represents various alphabets, numbers and punctuations marks by a combination of dots and dashes.

ALPHABETS:

A	DI DAH	N	DAH DIT
B	DAH DI DI DIT	O	DAH DAH DAH
C	DAH DI DAH DIT	P	DI DAH DAH DIT
D	DAH DI DIT	Q	DAH DAH DI DAH
E	DIT	R	DI DAH DIT
F	DI DI DAH DIT	S	DI DI DIT
G	DAH DAH DIT	T	DAH
H	DI DI DI DIT	U	DI DI DAH
I	DI DIT	V	DI DI DI DAH
J	DI DAH DAH DAH	W	DI DAH DAH
K	DAH DI DAH	X	DAH DI DI DAH
L	DI DAH DI DIT	Y	DAH DI DAH DAH
M	DAH DAH	Z	DAH DAH DI DIT

NUMBERS:

1	. . . . .	6	DAH DAH DAH DAH DIT
2	. . . . .	7	DAH DAH DAH DI DIT
3	. . . . .	8	DAH DAH DI DI DIT
4	. . . . .	9	DAH DI DI DI DIT
5	. . . . .	0	DAH DAH DAH DAH DAH

PUNCTUATION MARKS:

FULL-STOP	.	DI DAH DI DAH DI DAH	AAA
COMMA	,	DAH DAH DI DI DAH DAH	MIM
SEMI COLON	;	DAH DI DAH DI DAH DIT	NNN
BREAK SIGN	/	DAH DI DI DAH DIT	NR
HYPEN	-	DAH DI DI DI DI DAH	BA
QUESTION MARK	?	DI DI DAH DAH DI DIT	IMI
EQUAL TO	=	DAH DI DI DI DAH	BT
BRACKETS	()	DAH DI DAH DAH DI DAH	KK

ERROR MESSAGE		DI DI DI DI DI DI DI DIT	HH
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Note:

For sending a `dot' key is pressed to make a momentary electrical contact and released immediately. For a `dash' the key is pressed and held down for a length of time equal to three dots.

Hams Secret Code is Morse Code.

Radio telegraphy by Morse code, is named after its inventor SAMUEL FINELY BREESE MORSE, 1791 - 1872, an American artist and Promoter of the telegraph.

Morse code is economical, compact, less expensive, uses low power, gives global coverage and free from, disturbances and interference. It is the proud language of the amateur and is thoroughly enjoyable.

HINTS ON LEARNING MORSE CODE:

There is no magic, mystery or formula connected to this code, remember you are learning the language of "SOUND".

Learn to listen to the sound of the letters and avoid memorizing dots and dashes.

Write down each letter immediately as it is received and ignore doubtful ones.

Do not guess but leave a blank space and concentrate on the next letter. Avoid thinking back, you may lose more letters.

Practice morse half an hour a day and think of it rest of the day.

Start writing the code as you learn and do not use capitals.

This helps in picking up higher speed.

Set aside a definite time every day and stick to the schedule of daily practice.

Concentrate on writing what you hear and read it later.

Practice code with a friend together and send to one another.

Simple practice and more practice and reflex actions build. Soon you shall write automatically.

That is why many amateurs never even buy a microphone.

SYLLABUS AND THE DETAILS OF EXAMINATIONS FOR THE AWARD OF AMATEUR STATION OPERATOR'S LICENCE (Restricted) and (General)

1. The examination shall consist of the following two parts:

PART I - Written Test

It shall comprise of one paper containing two sections as under:

Section A: Radio Theory and Practice

Note- Applicants holding degree in Engineering/Science or Diploma in Engineering and having studied electronics or telecommunications shall be exempted from appearing in Section A of Part-I of the test.

Section B: National and International Telecommunication Union (ITU) Radio Regulations applicable to the operation of amateur station and those relating to the working of station generally.

**PART II – Morse (Only for General Certificate)
Morse reception and sending (8 wpm)**

2. Detailed syllabus:

2.1 Amateur Station Operator's Licence (Restricted) Examination

Part I – Written Test

Section A: Radio Theory and Practice:

(i) Elementary Electricity and Magnetism:

1. Elementary theory of electricity – Passive Devices(Resistors, inductors, Transformers, Capacitors) and Active Devices (diodes, Transistors).
2. Kirchoff's Current and voltage laws – simple applications of the law.
3. Conductors and insulators- Properties, units of circuit elements, Ohm's Law.
4. Conductance – Definition of self and mutual inductance.
5. Power and energy – Definition, Units of simple applications.
6. Permanent magnets and electromagnets – Definition, properties and their use.

(ii) Elementary Theory of Alternating Currents:

1. Sinusoidal alternating quantities – Definition of peak, instantaneous, R.M.S., average values and its simple application.
2. Phase, reactance, impedance, series and parallel circuits containing resistance, inductance, capacitance, resonance in series and parallel circuits, coupled circuits.
3. Rectifiers, voltage regulation and smoothing circuits – Their basic knowledge and simple application.

(iii) Elementary theory of Semiconductor Devices:

Diodes and transistors- Properties use of these devices for construction of amplifiers, oscillators, detectors and frequency changers.

(iv) Radio Receivers :

1. Principles and operation of T.R.F. and super heterodyne receivers.
2. CW reception, 3.Receiver characteristics-sensitivity, selectivity, fidelity, adjacent channel and image interference, A.V.C. and squelch/circuits, signal to noise ratio.

(v) Transmitter :

Principles and operation of low power transmitter, crystal oscillators, stability of oscillators and Basic knowledge about construction of Semiconductor based transmitters.

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(vi) Radio Wave Propagation:

1. Basic knowledge of Electromagnetic Spectrum, 2. Wave length, frequency, frequency bands. 3 Nature and propagations of radio waves, ground and sky waves, space waves, skip distance, skip zone and fading.

(vii) **Aerials:** Common types of transmitting and receiving aerials.

(viii) **Frequency Measurement:** Measurement of frequency and use of simple frequency meters.

Section B: Radio Regulations:

(a) Knowledge of :- (i) the Indian Wireless Telegraph Rules, 1973.

(ii) the Indian Wireless Telegraphs (Amateur Service) Rules, 1978 and amendments.

(b) Knowledge of ITU Radio Regulations as relating to the operation of amateur stations with particular emphasis on the following:

Item	Provision of Radio Regulation (2008 edition)	
Designation of Emission.	Appendix-I	
Phonetic alphabets and figure code.	Appendix 14	
Nomenclature of the Frequency & Wavelength.	Article 2	
Frequency allocation for Amateur Services.	Article 5	
Interference, measures against interference & tests. of Stations.	Article 15 Article 19.	Identification
Distress Signal, Call and Message. Transmissions.	Article 30, 31, 32 & 33.	
Urgency Signal, Call and Message Transmissions.	Article 30, 31, 32 & 33.	
Amateur Station.	Article 25	
Call Sign series allocated to India.	Appendix 42	

(c) Standard Frequency and Time Signals Services in the World.

(d) The following 'Q' codes and abbreviations shall have the same meaning as assigned to them in the Convention.

QRA, QRG, QRH, QRI, QRK, QRL, QRM, QRN, QRQ, QRS, QRT, QRU, QRV, QRW, QRX, QRZ, QSA, QSB, QSL, QSO, QSU, QSV, QSW, QSX, QSY, QSZ, QTC, QTH, QTR, and QUM.

Abbreviations: AA, AB, AR, AS, C, CFM, CL, CQ, DE, K, NIL, OK, R, TU, VA, WA, WB.

Note: -

1. The written test will be of **one hour** duration. The maximum marks will be 100 and candidate must secure at least **40 %** in each section and **50%** in aggregate for a pass.

2. There will be **NO Morse test for restricted grade.**

2.2. Amateur Station Operators' Licence (General) Examination

Part I - Written Test

Section A: Radio Theory and Practice

In addition to the syllabus prescribed for Amateur Station Operator's License (Restricted) examination, following items shall be included in the syllabus of Amateur Station Operators' license (General) examinations:-

- (i) Principles of Communications:** Elementary idea of analog and digital communication, Need for modulation; Modulation-amplitude, frequency and pulse modulation.
- (ii) Alternating current:** 1. Basic concepts on construction of transformers. 2. Definition of Transformer losses. (3) Transformer as a matching device.
- (iii) Semi Conductor devices and Transistors:** Elementary principles of conduction and construction; symbols and biasing methods.
- (iv) Power Supplies:** Basic knowledge of Half wave and full wave rectifiers including bridge rectifier, smoothing and regulating circuits.
- (v) Transmitters and Receivers:** Elementary principles of transmission and reception of Facsimile and Television signals,
- (vi) Propagation:** Characteristics of ionosphere and troposphere. Properties of ionosphere layers, critical frequency and day / night frequencies.
- (vii) Aerials:** Principles of radiation, aerials for different frequency bands including aerials for microwave,
- (viii) Space Communications:** Elementary principles of communication via satellites.

Section B: Radio Regulations:

“Same syllabus as prescribed for Amateur Station Operators' License (Restricted) examination”
The above written test will be of **two hour** duration. The maximum marks will be 100. A candidate must secure at least 55 % in each section and 60% in aggregate for a pass.

Part II - Morse

Morse receiving: (Speed: 8 words per minute)

The test piece will consist of a plain language passage of 200 characters which may comprise of letters, figures. Test piece may also contain the following punctuations ie full stop; comma; semi colon; break-sign; hyphen and question mark. The average words shall contain five characters and each figure and punctuation will be counted as two characters. The test will be for five consecutive minutes at a speed of 8 words per minute. A short practice piece of one minute shall be sent at the prescribed speed before the start of the actual test. Candidates will not be allowed more than one attempt in Morse reception and sending test. The test may be written in ink or pencil but must be legible. Over-writing will be treated as error. If any correction is required the candidate may struck the wrong character and write the correct above the character. More than 5 errors will disqualify a candidate. However if a candidate receives without any error in any part of the passage continuously for one minute duration will be declared successful in the Morse reception test.

Morse Sending (Speed: 8 words per minute)

The test piece will be similar to Morse Receiving test for Amateur Station Operators' License (General) examination. Candidates are required to send for five consecutive minutes at a speed not less than 8 words per minute. Other conditions are the same as applicable to Amateur Station Operators' License (General) examination.

Note- A candidate shall have to pass both receiving and sending simultaneously.

