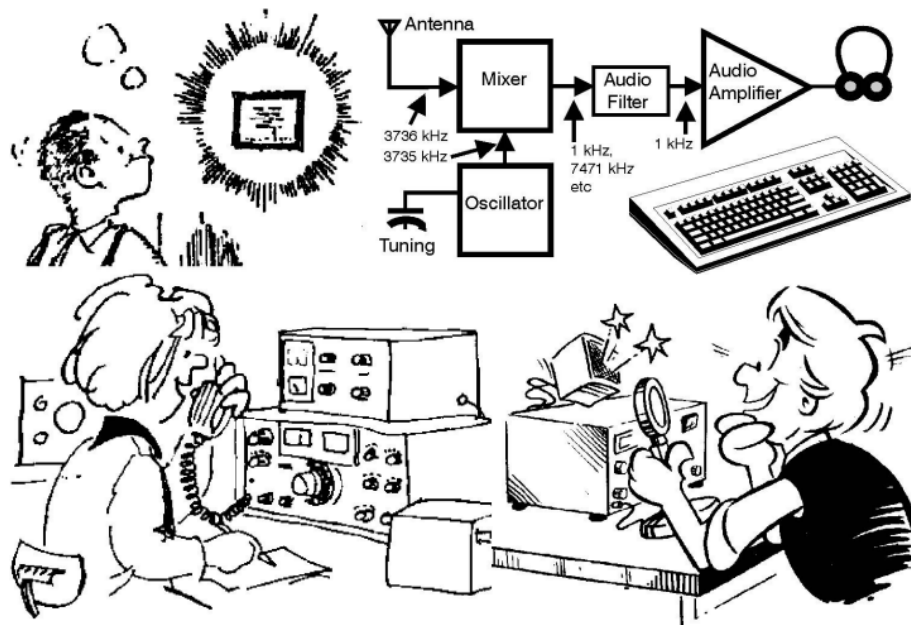


AMATEUR RADIO in New Zealand

The NEW RULES explained...

Become a RADIO AMATEUR!



The New Zealand Association
of Radio Transmitters Inc.
P.O. Box 40 525 UPPER HUTT 5018
Phone: 04 528 2170 Fax: 04 528 2173
nzart@nzart.org.nz



Revised: December 2006

CONTENTS

The two important documents	3	Third party traffic	9
The Regulations	3	Mobile and portable operating	
Regions	4	No 'secret codes'	9
International Telecommunication Union	4	Overseas travellers	9
International Amateur Radio Union	4	Harmful Interference	10
NZ Association of Radio Transmitters	5	Unwanted Emissions	10
IARU Region 3	6	Transmitter Power Output	10
How does it all fit together?	6	Frequency Bands	10
National Radio Regulations	6	Sharing of Bands	10
How do I get started?	7	Additional notes about other bands	11
The Examination Process	7	Amateur Radio Band-planning	11
Receiving a Certificate	7	Compliance and enforcement	11
Callsigns	7	Appendix 1: The International Radio Regulations	12
Applications for a new callsign	8	Appendix 2: Extract: NZ Radio Regulations	15
Existing Callsigns	8	Appendix 3: GURL – Amateur Radio	17
Amateur Radio Operating Conditions	8	Appendix 4: Question Summaries	19
When first on the air	9	Appendix 5: The Q-Code	21
Log Books	9	Appendix 6: Examination Syllabus	22

INTRODUCTION

The *Syllabus* for the New Zealand Amateur Radio Examination is here with the information needed to study the 'Regulatory Topics'.

A book with all 600 questions in the New Zealand Amateur Radio Examination Question-bank can be downloaded from the NZART website or purchased from NZART. You can expect 60 computer-selected questions in the two-hour examination. The question-bank is the intellectual property of NZART and can only be used within NZART systems and procedures to ensure the integrity of the examination process is maintained.

You will also need one or more 'technical books'. An excellent book for the basics of amateur radio and for radio theory is *The NZART Basic Radio Training*

Manual: Purchase it from NZART. The latest version is desirable but any edition will help you.

It does not cover the *New Zealand regulatory requirements* for the examination, that need is filled by this "*New Rules Explained*" booklet.

Many Amateur Radio Handbooks cover the technical topics of the Syllabus. Borrow or buy them.

When you are ready for the examination, contact your local NZART Branch. An examination can be arranged for you at a mutually-agreed time and place.

If you have access to a computer, visit the NZART web site at: <http://www.nzart.org.nz> for examination information including a Study Guide for all the syllabus.

Good luck with your studies, we'll '*see you on the air!*'

WELCOME TO AMATEUR RADIO!

START

Regulations and Theory Test: **60 questions** from a public-domain question-bank

40 correct answers

You qualify! Make application for an Amateur Radio Certificate of Competency with your own callsign! You can operate on the air!

The Question-bank, a STUDY GUIDE, Tutorial Notes, sample TEST PAPERS and TEXTBOOKS are available See the NZART web page: www.nzart.org.nz

Tests are 'by appointment': The time and place can be arranged with local volunteer Examination Supervisors. Your results are given on the spot!

Enquiries to: The New Zealand Association of Radio Transmitters Inc. Ph: 04 528 2170 nzart@nzart.org.nz

Things you can try:

- Frequency Modulation
- Single Sideband
- Internet linking
- Moon-bounce
- Slow-scan TV
- Digital Radio
- Amateur TV
- Morse code
- Repeaters
- Satellites
- PSK31
- Mobile
- ... and much, much more

Experience AMATEUR RADIO! Operate on bands below 5 MHz and above 25 MHz for 3 months. Log 50 or more contacts

You have access to ALL AMATEUR RADIO BANDS

Your **CALLSIGN** is unique to you

ZL1ABCD

The prefix **ZL** is for New Zealand

1 to 4 indicates the holder of a General Amateur Operator Certificate of Competency

The **2, 3, or 4** letter suffix makes the callsign unique

AMATEUR RADIO – The NEW RULES explained

Establishing and Operating an Amateur Radio Station in New Zealand

Compiled by Fred Johnson MNZM ZL2AMJ *Revised: December 2006* email: zl2amj@nzart.org.nz

The New Zealand Radiocommunications Regulations and Amateur Radio

These notes cover the regulatory topics for the Amateur Radio Examination and are for reference use by New Zealand radio amateurs.

The "*regulatory aspects*" of Amateur Radio are very important, so important that these notes cover many topics in *very much greater detail* than is necessary for the examination. As a radio amateur you need to be aware of many regulatory things and to know where to find them in the various documents!

Operating a radio transmitter in the crowded radio frequency spectrum requires a good understanding of what you are *permitted* to do, what you are *required* to do, and what you *MUST NOT* do.

There are many privileges and responsibilities to being a radio amateur:

- Radio amateurs are not constrained to any fixed frequencies but may operate on frequencies of their own choosing within the frequency bands allocated to amateur radio distributed throughout the radio frequency spectrum.
- Radio amateurs may use communication modes of their own choosing.
- The equipment used by radio amateurs need not be 'type-approved' like the equipment used by most other radio services.
- Radio amateurs can construct and operate their own equipment on any of the many radio frequency bands.

There are **TWO** important documents. These are:

1. The "**General User Radio Licence for Amateur Radio Operators**". It can be viewed by anyone at an official government website and downloaded and printed.

(This **G U R L** permits the holder of a "**General Amateur Operators Certificate of Competency**" to operate an amateur radio station in New Zealand. This **G U R L** lists terms, conditions and restrictions, including a schedule of the amateur radio frequency bands.)

2. The "**General Amateur Operators Certificate of Competency**". Amateur Radio Operators are qualified persons, they have each passed a written examination and each is the holder of an individual *Certificate of Competency*.

(Each operator's name, address and other information is entered and held in an official on-line database. The Certificate is downloaded and printed from this database and is kept in the possession of the individual operator.)

Each "*Certificate of Competency*" identifies the operator and lists one or more individual and unique *callsigns*, unique to that individual operator. The callsign(s) listed on the Certificate are used on-air by the named operator to identify that particular station.

You must know and understand more about these two documents.

The GURL: A copy is attached in *Appendix 3*. Study it carefully. It is available at:

<http://www.rsm.govt.nz/licensing/gurls/gurl-amateur.html>

The Certificate of Competency: The Amateur Radio *database records* are held by the **Ministry of Economic Development, Radio Spectrum Management Group's SMART** - "*Spectrum Management And Registration Technology*". SMART is accessible on-line by anyone for viewing any certificate-holder's callsign and information: <http://www.rsm.med.govt.nz/pls/web/dbssiten.main>

With the aid of a supplied confidential "*Client Key*" and "*Password*", each amateur operator, i.e. you as a certificate and callsign holder, has access to your personal contact details in the database and you are required to keep the address and other contact details up-to-date. You can also order a replacement Certificate of Competency and it can be emailed to you.

If you don't have the facilities to do this on-line, an **ARX** (Approved Radio Examiner) can do it for you. An ARX is a person authorised to make new entries to the database for candidates who pass the Amateur Radio Examination and among other things, to arrange callsigns for newly-qualified amateurs.

The NZART Examinations Coordinator and General Secretary has ARX privileges and can attend to these matters for you. There is a fee involved to cover the costs of these administrative services.


The Regulations:

The **Amateur Radio Examination** requires a knowledge of the relevant *national* and *international* regulations, covered in this booklet. An understanding of some basic radio theory and some radio operating knowledge is also required.

Please refer to the **SYLLABUS** in *Appendix 6* and to the **QUESTION BANK** to see the *coverage* and the *standard of knowledge required* for the examination.

A Regulations SUMMARY Question-sheet: "*aide-memoire*" is attached in *Appendix 4*.



There are two "Radio Regulations" documents - the **International Radio Regulations** and our **New Zealand Radio Regulations**. You are expected to have an


NEW ZEALAND
Radio Operator Certificate of Competency
(Issued under the authority of section 134 (1)(e) of the Radiocommunications Act 1989 and regulation 24 of the Radiocommunications Regulations 2001 and remains valid unless revoked by the Chief Executive under section 26 of the Radiocommunications Regulations 2001)

Certificate Number: [REDACTED]
 Client Number: [REDACTED]

[REDACTED]
 This is to certify that the above named person meets the competency requirements for the class of certificate
NZ General Amateur Operators Certificate
 under the authority given by the Ministry of Economic Development.

Personal Details
 Date of Birth: [REDACTED]
 Place of Birth: [REDACTED]
 Country of Birth: [REDACTED]
 Height: [REDACTED]
 Complexion: [REDACTED]
 Colour of Eyes: [REDACTED]
 Colour of Hair: [REDACTED]
 Address: [REDACTED]

Allocated Callsigns (issued pursuant to the provisions of Schedule 1(8) of the regulations)
 Primary Personal Callsign: [REDACTED] Secondary Personal Callsign: [REDACTED]

The above named person meets the requirements to operate an Amateur radio station in accordance with the provisions of the Radiocommunications Regulations (General User Radio Licence for Amateur Radio Operators) Notice 2006, or a notice in replacement thereof, granted by the Ministry of Economic Development under Regulation 9 of the Radiocommunications Regulations 2001.

CEPT RADIO AMATEUR LICENCE EQUIVALENT
This radio amateur licence is in accordance with CEPT Recommendation T/R 61-01 E.
 E ahei ana te tohu o tenei pou nunaruna reo irirangi i runga inga whakahau o te Waeture CEPT T/R 61-01 E.
 Diese Amateurfunkgenehmigung entspricht der CEPT-Empfehlung T/R 61-01 E.
 Cette licence de radioamateur correspond de la Recommendation T/R 61-01 E de la CEPT.
 The competency requirements to which this certificate relates are specified in Recommendation ITU-RM.1544 of the International Telecommunications Union, and are further prescribed in Schedule 4 to the Radiocommunications Regulations 2001.

Radio Spectrum Management
 Approved Radio Examiner Number: ARI2001
 Issued: 11-Aug-1959

Printed: 28-Nov-2006 10:02:54

technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

1.57 amateur-satellite service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the *amateur service*.

Re-read the definition of the Amateur Service in **1.56** above and look at Question 1 in the Regulations part of the Question-Bank. See *Appendix 4*.

Regions:

For regulatory purposes, the International Radio Regulations divide the world into three 'Regions':

Region 1 is Europe, the 'old USSR' areas and Africa.

Region 2 is North and South America.

Region 3 is the rest of the world, including New Zealand.

The radio frequency allocations can differ between the three regions, but at this time this does not concern your studies for the amateur radio examination.

understanding of both of them. *It is not necessary to learn them off in parrot-fashion!* The important parts are here:

1. Extracts from the International Radio Regulations:

The International Radio Regulations of interest to radio amateurs are collected here in *Appendix 1*. Important regulations are in Article 25.

2. Extracts from the New Zealand Radio Regulations:

A copy of **Schedule 1** from the New Zealand Radiocommunications Regulations 2001 is attached. See *Appendix 2*.

(Note the reference to the **International Radio Regulations in 1 and 2 of Schedule 1 to the NZ Regulations**.)

(For reference purposes: The complete NZ Radiocommunications Regulations 2001 and the Radiocommunications Act can be found at: www.legislation.govt.nz)

Both the International and the New Zealand Radio Regulations give authority for the issuing of radio licences - but we don't need to go looking to find the exact regulations or to study their words.

Two definitions:

Two important **Amateur Radio** definitions taken from the *International Radio Regulations* are:

1.56 amateur service: A radiocommunication service for the purpose of self-training, intercommunication and

More background:

You should know about these **INTERNATIONAL** and **LOCAL** organisations:

The ITU: The world telecommunications body *The International Telecommunication Union*

The International Telecommunication Union, headquartered in Geneva, Switzerland, is an international organisation within which governments and the private sector coordinate global telecom networks and services. It is an agency of the United Nations.



It can be viewed as an assembly of representatives from governments. Further details may be obtained from the ITU web page: <http://www.itu.int/>

Through its various conferences and activities, the ITU produces the *International Radio Regulations*. This document is constantly evolving through the work of ITU conferences.

As shown in *Appendix 1*, the Amateur Service is listed in these regulations, with a definition of the Amateur Service and in Article 25 with aspects setting the activities of radio amateurs.

The definition for the Amateur Service:

"A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest."

This definition applies in New Zealand.

New Zealand is a member of the ITU and the Ministry of Economic Development (MED), Radio Spectrum Management Group (RSM) attends to ITU matters for the New Zealand government.

The New Zealand *Administration is the Ministry of Economic Development (MED) Radio Spectrum Management group (RSM).*

The MED web page with spectrum management detail is at: <http://www.med.govt.nz/rsm>

The IARU: The world amateur radio body

The International Amateur Radio Union

Because it uses an international natural resource, the radio spectrum, Amateur Radio must organize nationally and internationally for better mutual use of the radio spectrum among radio amateurs throughout the world, to develop Amateur Radio worldwide, and to successfully interact with the agencies responsible for regulating and allocating radio frequencies.



At the international level, national societies throughout the world work together for the international good of Amateur Radio under the auspices of the International Amateur Radio Union (IARU). The IARU web page is at: <http://www.iaru.org>

The IARU is an organisation in which its **Members** are Amateur Radio **societies**.

Created in Paris in 1925, the IARU has been the watchdog and spokesman for the world Amateur Radio community. The IARU Constitution organises the Union into three Regional Organizations that correspond to the three administrative regions of the ITU. (See IARU Region 3 on the next page.)

The IARU is a member of the ITU Radio Sector and the ITU Development Sector. Representatives from IARU may attend ITU meetings and conferences, representing the Amateur Service and the Amateur Satellite Service.

The IARU has its headquarters, the 'International Secretariat', at the headquarters of the USA society, the American Radio Relay League (ARRL), in Newington, Connecticut, USA.

The prime purpose of the IARU is the protection of the Amateur Services. The IARU objectives, as shown in the IARU Constitution, are:

1. The name of this organization is the International Amateur Radio Union (IARU), hereinafter also referred to as the IARU.

2. Its objectives shall be the protection, promotion, and advancement of the Amateur and Amateur-Satellite Services within the framework of regulations established by the International Telecommunication Union, and to provide support to Member-Societies in the pursuit of these objectives at the national level, with special reference to the following:

- a) representation of the interests of amateur radio at and between conferences and meetings of international telecommunications organizations;
- b) encouragement of agreements between national amateur radio societies on matters of common interest;
- c) enhancement of amateur radio as a means of technical self-training for young people;
- d) promotion of technical and scientific investigations in the field of radiocommunication;
- e) promotion of amateur radio as a means of providing relief in the event of natural disasters;
- f) encouragement of international goodwill and friendship;
- g) support of Member-Societies in developing amateur radio as a valuable national resource, particularly in developing countries; and
- h) development of amateur radio in those countries not represented by Member-Societies.

The IARU Constitution may be viewed at: <http://www.iaru.org/iarucnst.htm>



NZART: New Zealand's society for radio amateurs

The New Zealand Association of Radio Transmitters Incorporated

Founded in 1926, the New Zealand Association of Radio Transmitters (NZART), is recognised by the New Zealand Government as the official body representing New Zealand's radio amateurs. The MED seeks the view of NZART before making regulatory changes and representations to the ITU affecting the Amateur Service. Further details about NZART can be obtained from its web page: <http://www.nzart.org.nz/>

There are several categories of NZART membership which include 'Transmitting' and 'Non-Transmitting'. Anyone interested in radio can join. **YOU SHOULD JOIN TODAY!** Enquiries to NZART, P.O. Box 40 525, Upper Hutt or to nzart@nzart.org.nz will bring details of the privileges of NZART membership. Send your name and postal address and ask for membership information to be sent to you.

The Objectives of the NZART in the NZART Constitution are:

The objects of the Association shall be the maintenance and expansion of the Amateur Service in New Zealand by:

- (a) the encouragement of recruits into the Amateur Radio movement
- (b) the provision of guidance and instruction in radio technique and operating
- (c) the promotion organisation and conduct of activities on a national and a local basis to achieve high standards in the skills involved in Amateur Radio
- (d) the publication of an Official Journal
- (e) making known the merits of Amateur Radio in the community and nation
- (f) representing the interests of Amateur Radio
 - (i) with the Administration responsible for radio services, and
 - (ii) with other official authorities both national and international controlling conditions for Amateur Radio activities
- (g) collaborating with the National Amateur Radio Societies of other countries in the interests of world progress in Amateur Radio
- (h) taking any appropriate actions regarding the international regulations of radio, to safeguard Amateur Radio interests
- (i) the organising and provision of communication services for the authorities as required
- (j) co-operating with the amateur radio licensing authority in New Zealand by undertaking regulatory functions, whether through a subsidiary corporate body or otherwise
- (k) taking such other action which in the opinion of the Executive Council is consistent with these objects.

The NZART Constitution may be viewed at:
www.nzart.org.nz/nzart/NZART/NZARTConstitution.pdf

NZART has been a member of IARU since 1929.

IARU Region 3: The REGIONAL amateur radio body:

IARU Region 3

IARU has adopted the same three Regions as the ITU and each Region has its own amateur radio organisation. IARU Region 3 was founded in Sydney in 1968 with NZART one of the founding member societies. The Headquarters of IARU Region 3 is in Tokyo, Japan, at the headquarters of the Japan Amateur Radio League (JARL).



The Objects of IARU Region 3 are similar to those of IARU but centred on the Asia-Pacific area. An IARU Region 3 web page is at <http://www.jarl.or.jp/iaru-r3/> but may change to: <http://www.iaru-r3.org/>

The following extract is from the IARU Region 3 Constitution:

The name of the organisation shall be the International Amateur Radio Union Region 3 herein called 'IARU Region 3.'

Object and Activities:

The object of IARU Region 3 is to

promote, represent and advance in whatsoever manner IARU Region 3 thinks fit,

the interest of Radio Amateurs in all countries of Region 3 of the International Telecommunications Union (and without limiting the generality of the foregoing)

by the furtherance of the objects of the International Amateur Radio Union and

having regard to the special interest of radio amateurs in Asia and Oceania

which interests are to protect and enhance radio amateur privileges in all of the countries in the Region,

to encourage an awareness of the value of radio amateurs by the administrations of all the countries in the Region,

to educate and encourage potential radio amateurs in all of the countries of the Region,

to represent radio amateurs both nationally and internationally, and

to protect and retain amateur radio frequency allocation as frequencies allocated for the sole use of radio amateurs

and provided always shall exercise its powers in support of IARU and not in substitution for the exercise of power by IARU.

How does all this fit together?

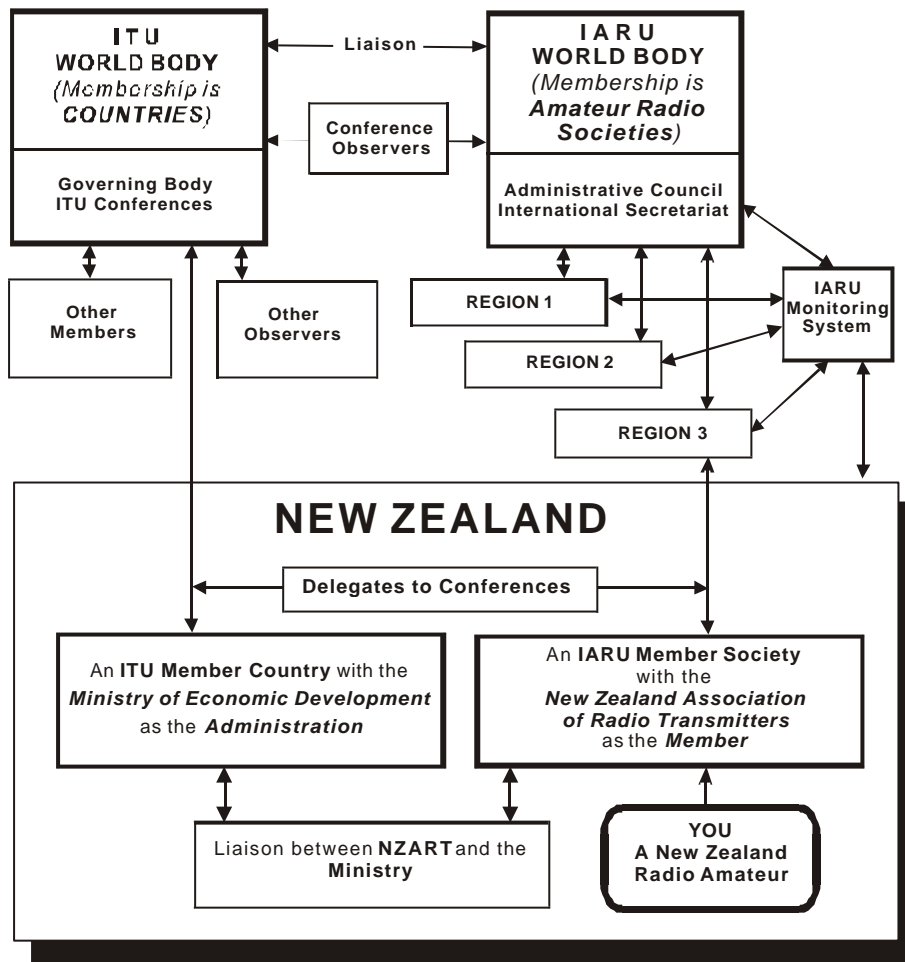
Every two years or so, the ITU holds an international **conference**, at which the **International Radio Regulations** and other documents are discussed and modified. New Zealand is represented at these conferences by a delegation led by the New Zealand *Ministry of Economic Development (MED)*, *Radio Spectrum Management Group (RSM)*. An NZART member may sometimes be a part of the New Zealand Delegation to represent the Amateur Service. The MED RSM is **the New Zealand "Administration"**.

Each **IARU Region** holds a **conference** every three years and these are arranged in sequence, so there is a regional amateur radio conference held each year in one of the three regions. The 13th IARU Region 3 Conference was held in Bangalore in 2006. NZART has sent a delegation to all previous IARU Region 3 conferences and takes an active and leading part.

National Radio Regulations:

Countries set additional local licensing conditions for their radio amateurs. These differ greatly in detail, but all should conform to the *International Radio Regulations*.

As stated earlier, the current document is the **New Zealand Radiocommunications Regulations 2001**. Those Regulations set many things a radio amateur must observe. Many of these are considered below.



have several examinations that must be attempted and passed in sequence - with several grades of licence too.)

The written examination comprises 60 multiple-choice questions covering **Regulations** and **Theory** in a single two-hour examination. This is conducted by appointment and held at a mutually-agreed place and time by volunteer Examination Supervisors from designated NZART Branches.

The written test is computer-generated using questions the computer carefully selects from a 600-question public-domain question-bank. The STUDY GUIDE contains **ALL** those questions and some sample tests for you to try! A booklet with all the questions in the question-bank can be downloaded from the NZART website or a printed copy can be purchased from NZART.

A **pass** requires **40** correct

answers. Your result is given to you on the spot. A successful "Examination Result Notification" (ERN) is recognised by the MED RSM for certificate/callsign application purposes. An ARX can enter the results of a successful candidate into SMART and set up the records for a new client radio amateur.

Variations to the established Examining Process:

The Radiocommunications Regulations 2001 Regulation 28 (2) provides, at the MED Chief Executive's discretion, for variation to the manner in which an examination is carried out. If there is need to vary the examination process for a candidate with a particular disability, the local Examination Supervisors should ensure the candidate is fully aware of the established exam procedure and is encouraged to state a preferred variation to the examination procedure as determined by personal circumstances. The Supervisors should approach the MED RSM Head Office with a recommendation for a variation to the examining process and obtain approval for that variation before the examination takes place. The Ministry will deal with each case as it arises and sees referral by a medical expert and use of a neutral reader/writer as its preferred option.

Receiving a Certificate:

An *Examination Result Notification* (ERN) is issued on-the-spot after each examination supervised by NZART Examination Supervisors. A successful ERN is recognised for certificate-application purposes. The Certificate of

So, how do I get started?

If you require assistance with your studies, or wish to attend a class, or when you are ready for an examination, you should contact your local NZART Branch or the Examination Supervisors in the local Branch.

You can obtain assistance from NZART Headquarters too. The NZART General Secretary is also the NZART Examination Coordinator and is also an "Approved Radio Examiner" (ARX) - approved by the Ministry of Economic Development, Radio Spectrum Management Group. The ARX will be pleased to provide any further information you may require.

A "*General Amateur Operators Certificate of Competency*", in your name, with a *callsign*, is granted after passing a written examination.

The diagram on page 2 shows the sequence to follow to obtain the amateur radio qualification:

NZART provides an examination service. There is a fee involved at various stages. These fees are to cover administrative costs and are usually once-only. A copy of the NZART Callsign and Certificate Fees document is available from NZART Headquarters and gives administrative and procedural arrangements.

The Examination Process:

(In New Zealand there is only **one** amateur radio examination and **one** grade of licence. Some countries



Competency is emailed after the ARX has successfully put the entries into SMART.

You can feel really proud and hang a *certificate* on your wall to recognise your achievement. You have a qualification that has international recognition.

Callsigns:

The ARX will set up your callsign at the time when your personal and examination result details are first entered into SMART.

The arrangements and the format for the ARX to follow when generating an amateur radio callsign are given in the Ministry's public information brochure "*Approved Radio Examiners (ARX) Manual – Radio Operator Certificate and Callsign Rules*" document **PIB46**. This Brochure is to be available from the Ministry of Economic Development, Radio Spectrum Management Group.

More can be learned about callsigns by investigating the MED RSM website and by checking existing and yet-to-be-allocated callsigns using the SMART on-line facility.

Find some not-yet-allocated ones! Your callsign selections should fit the regular broad patterns: ZL1, ZL2, ZL3 or ZL4, with a two-or-three-letter suffix.

It is recommended that you provide your choice of *three callsign selections, in priority order*, to the ARX with your **ERN** and **Radio4A** form, all completed and legible, at the time you make application to become a radio amateur.

An operator can request the address to be withheld for privacy reasons - but remember that some stations worked prefer to post their QSL cards direct to you and will require your address. Let your address be seen.

Applications for a New Callsign

Candidates wishing to sit the amateur radio examination are requested to **present a passport photo ID** complete with a witness' signature confirming the identity of the candidate. For a successful candidate, this will later be placed electronically on the Certificate of Competency.

Application form **Radio 4A** must be completed by the applicant and sent together with the **passport photo ID** and the blue ERN (Exam Result Notification) form to the NZART Examination Coordinator. The NZART Examination Coordinator has ARX privileges — a Ministry of Economic Development, Radio Spectrum Management, (MED RSM) Approved Radio Examiner.

Form **Radio 4A** can be found on the RSM web site at: <http://www.rsm.govt.nz/formsfees/radio4a.pdf>

Please ensure that ALL the information entered on these forms is accurate, clear and READABLE!

Where an e-mail address is provided by the candidate, upon completion by the ARX of processing a new amateur's details on-line in SMART (*RSM's Spectrum Management and Registration Technology*), a copy of the certificate will be sent direct to the candidate by e-mail.

If all the information above is not provided at the processing time, or if the information provided is illegible, the application will be delayed and a callsign cannot be issued.

Existing Callsign Holders

In November 2005 existing callsign holders received a special Client ID and password from the RSM Office giving on-line access to their records in the Ministry's new SMART system.

The callsign holder can make change-of-address, amend other contact details and request a replacement certificate on-line. There are no fees to access your own information or to make any amendments yourself. A hard-copy certificate, in colour on card, can be requested posted from the NZART Examination Coordinator (ARX) for a fee.

NOTE: You are required by the Radio Regulations to make updating changes to your permanent address within 7 days or get an ARX to do it for you.

Should your Client ID and password have been misplaced, reactivate it by contacting the RSM Processing Centre in Christchurch, Freephone: 0508 776 463.

Amateur Radio Operating Conditions:

The amateur radio qualification does not permit operation for commercial or business purposes, or for "pecuniary gain" (i.e. for making money). (See the *definition* of the **Amateur Service**.)

A General Amateur Operators Certificate of Competency entitles the holder to operate transmitters in the *bands of frequencies* designated for amateur radio use in the GURL.

Please note that the GURL and the Certificate do not specify any *transmission mode* to be used on any *amateur band*. That is the licensee's choice. (Note too the details about Band-planning discussed below.)

Note that *radio amateurs* are permitted to use the designated industrial, scientific and medical (*ISM*) band at 27.12 MHz *for telecontrol and telemetry operation only*. It is *not an amateur band* but all amateurs are permitted to use it.

Amateur stations may communicate with other amateur stations *only*. Amateurs may **not** communicate with commercial or other stations operating legally or illegally either inside or outside the designated amateur bands.

The only exception to this is under *emergency conditions*.

This approval is specified in the *International Radio Regulations* (see **RR 4.9**). If safety of human life is at risk, communication on any frequency by anyone is permitted. Very occasionally a distress call has been received by an amateur operator. If no official station replies, an amateur may make contact and should also

immediately alert the NZ Police. If an official station does reply, all other stations are obliged to clear the frequency.

A visiting amateur should use his/her own callsign if in control of a station visited. If the owner is present and in control, it is permitted to use the owner's callsign.

Regulatory information undergoes frequent revision and circumstances change, so you are advised to check the MED RSM web site from time-to-time to check for up-to-date versions of the GURL and other documents.
<http://www.med.govt.nz/rsm>

The MED RSM will give sympathetic consideration to requests for **reasoned variation** to individual amateur operating conditions. An example is the temporary use of higher-power for moon-bounce experiments.

Other important points are:

There is no upper or lower age limit.

Your certificate can be inspected by an authorised officer from the MED at any time.

If you change your residential address, you must change your contact information on the Ministry's database within 7 days. If you cannot do this yourself, ask an ARX to do it for you.

To replace your lost certificate, you yourself can download or get a new one downloaded by an ARX from the MED RSM's SMART.

All amateur stations, regardless of the mode of transmission used, must be equipped with a reliable means for determining the operating radio frequency.

You must announce your callsign at least once in 15 minutes when operating.

It is important to note that radio amateurs are not "broadcasters". The transmission of music and entertainment by radio amateurs is **not permitted**. There is a separate ITU definition for broadcasters: "*Broadcasting Service: A radiocommunication service in which the transmissions are intended for direct reception by the general public ...*" etc. You are not permitted to make broadcasts.

When first on the Air:

On receiving your certificate and callsign you are permitted to operate on the bands below 5 MHz and on the bands above 25 MHz. After experiencing three months of practical operating and with 50 or more contacts in your log book, you are then permitted to operate on all the amateur bands. You must keep the log book and produce it on request. See paragraph 3(3) in the GURL.

Log Books:

You are required to keep a station log book to log at least 50 contacts when you are first qualified. This is the only regulatory requirement for a log book. However, it is recommended that radio amateurs keep a log book for at least two important reasons:

First, it is a record of your operating and may be a useful record and protection for when a neighbour reports interference to broadcast or television reception. Were you actually operating at the time claimed?

Second, it is an important document for amateur radio contests and awards – and for keeping track of each QSO and its QSL card actions, noting the cards sent and the cards received.

A suitable station log book with columns for the appropriate entries can be purchased from NZART. Contact: NZART Headquarters, P.O. Box 40-525, Upper Hutt, fax: 04 528 2173, or email nzart@nzart.org.nz.

Third Party Traffic:

Other people ("third parties") may pass "brief personal messages" using an amateur's station **only if** the owner/operator is present and in control of the station. They should not manipulate the transmitting controls of the station. Under no circumstances may an unqualified person operate an amateur's station.

New Zealand permits third party traffic with any other country. But **BEWARE!** Other countries **may not be permitted to handle third party traffic with you**. Many countries have country-to-country diplomatic agreements for amateur radio third-party traffic. New Zealand is not a party to any such agreement. This situation can only be changed by the other country, it is not New Zealand's problem. So make sure that the station you work is permitted to handle third-party traffic with you before doing so. Don't put your certificate or the certificate/licence of the distant station at risk.

NZART has developed a document "*Guidelines for THIRD PARTY TRAFFIC*". A copy can be obtained from NZART Headquarters.

The internet is now frequently used for station linking. Be sure that unlicensed persons cannot get access to amateur radio spectrum. To assist you, NZART has developed a document: "*Guidelines: THE INTERNET and AMATEUR RADIO*". A copy can be obtained from NZART Headquarters.

Mobile and portable operating:

A separate licence/qualification and callsign is not necessary when "operating mobile" or when "operating portable". Use your home station callsign and *call/P* or *call/M* when using CW and "*callsign Mobile*", or "*callsign Portable*" when away from home for short periods.

No "secret codes":

Amateur radio communication is **NOT** permitted to use "*secret codes*" at any time. Encryption of messages for the purpose of *hiding the contents* from other amateurs or listeners is illegal.

The only exception is for *licensees* of repeaters and beacon stations and for satellites to carry out control functions. A different licence is issued for a repeater station and for a beacon station. Establishing a repeater or beacon station is **not permitted under the amateur operator GURL**.

Some modes (for example packet radio and PSK31) *do* use forms of encryption, but these are legal because the decoding protocols are public knowledge and can in principle be decoded by other amateurs and by monitoring stations. The Q-Code is public knowledge!

Overseas Travellers:

Overseas radio amateurs visiting New Zealand:

The amateur radio GURL provides for overseas radio amateurs who intend to visit and to operate their own station in New Zealand. Refer to the appropriate page on the MED RSM web site for information:
<http://www.med.govt.nz/rsm/licensing/gurls/gurl-amateur.html>

In effect, the overseas visitor can walk down the gangplank and commence operating immediately upon arrival in New Zealand! A "General User Radio Licence" (GURL) is a licence that provides for a given class of radio transmitter to be used without requiring a licence in the owner's own name.

New Zealand radio amateurs travelling overseas:

New Zealand amateur radio qualifications are widely recognised overseas. Reciprocal licensing agreements of several different kinds exist between New Zealand and many other countries.

New Zealand operators who are contemplating travelling overseas are advised to contact the **NZART Reciprocal Licensing Bureau**, (an NZART Service), for up-to-date information about using the New Zealand qualification overseas or getting a local licence to operate in other countries. There are different systems in place in different countries. Contact: NZART Headquarters, P.O. Box 40-525, Upper Hutt or email to nzart@nzart.org.nz

If a Morse code test pass is required for a reciprocal licence, a Morse test can be arranged with NZART Morse Testers. Arrange through NZART Headquarters.

Overseas regulatory arrangements and requirements are always changing so an early enquiry before travel would be wise. The web pages of some overseas administrations may give the information and the procedures required. See also:

www.arrl.org/field/regulations/io/ recip-country.html

Harmful Interference:

Harmful interference is defined in the International Radio Regulations (See **RR 1.169**). In short, it is *any radiation or emission which seriously obstructs or repeatedly interrupts other licensed radio services*.

Amateurs are not permitted to block or to interfere with another amateur's transmissions. Such deliberate transmissions would create "malicious" interference.

Television interference (TVI) caused to neighbours is *not necessarily harmful interference* if the amateur is transmitting signals free from spurious radiation within the terms of the GURL.

It is **correct operating practice** to check that the frequency you propose to use is free from other users **BEFORE** you transmit.

Unwanted Emissions

The GURL in para 5 (9) refers to **unwanted emissions** and to the ETSI document: ETS 300 684. (You can find this on-line using Google.) The important points are on page 6

(where it refers to commercial "amateur" equipment only) and on page 23 (where levels of measurement are given).

The GURL makes it clear that these measurements refer to **all** unwanted transmissions from amateur gear that fall **outside amateur bands**. This is encouragement for home-constructors of transmitting equipment. The view taken is that "*what amateurs do within their own bands is their own problem and for them to fix*". Keep your transmissions "clean"!

Transmitter Power Output:

The GURL in para 5 (5) states that the radio frequency power output shall not exceed 500 watt peak envelope power (PEP). The definition **1.157** is in the International Radio Regulations.

The technicalities of this matter are considered in the Study Guide.

At all times amateurs are required to use *the minimum power and minimum bandwidth necessary to ensure satisfactory service*.

Frequency Bands:

A knowledge of the frequency bands between 130 kHz and 440 MHz is required for the examination. (See the GURL, *Appendix 3*).

The International Radio Regulations, in Article 2, say that as the unit of frequency is the hertz (Hz), frequencies shall be expressed:

- in kilohertz (kHz), up to and including 3 000 kHz;
- in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;
- in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

Frequency Band	Metre Band
130-190 kHz	1750 metres
1800-1950 kHz	160 metres
3.50-3.90 MHz	80 metres
7.00-7.30 MHz	40 metres
10.10-10.15 MHz	30 metres
14.00-14.350 MHz	20 metres
18.068-18.168 MHz	17 metres
21.00-21.45 MHz	15 metres
24.89-24.99 MHz	12 metres
27.12 MHz	11 metres
28.00-29.70 MHz	10 metres
50.00-54.00 MHz	6 metres
144.0-148.0 MHz	2 metres
430-440 MHz	70 centimetres

Note: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9).

Sharing of Bands:

Amateurs share some frequency bands with stations of other services. Full details about "sharing" are provided in the *International Radio Regulations* but only the general principles of sharing and the bands involved are needed for this examination.

Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Corresponding Metric Subdivision
VLF	3 to 30 kHz	Myriametric waves
LF	30 to 300 kHz	Kilometric waves
MF	300 to 3 000 kHz	Hectometric waves
HF	3 to 30 MHz	Decametric waves
VHF	30 to 300 MHz	Metric waves
UHF	300 to 3 000 MHz	Decimetric waves
SHF	3 to 30 GHz	Centimetric waves
EHF	30 to 300 GHz	Millimetric waves
	300 to 3 000 GHz	Decimillimetric waves

Several *Notes* to the Amateur Frequency Allocation Chart (in the GURL), explain the use by amateur stations of the "shared bands". See "*Notes 2 and 3 to the Table*".

Favourable access by radio amateurs to some bands used by other radio services has been given by the regulatory authorities. It is very important that these arrangements be respected so they can continue. The golden rule is: **Don't cause any interference to any other stations.**

As an amateur station licensee, you have "frequency agility", you can change your operating frequency to avoid other stations. Other services are usually licensed for one assigned frequency only and cannot shift.

Additional note regarding other bands:

The band 50 to 54 MHz is shown in the *International Radio Regulations* as AMATEUR but in New Zealand, only 51 to 53 MHz is available. Because the band 50 - 51 MHz is used by commercial television in New Zealand, a special permit is required and may be available from MED RSM for amateur stations wishing to operate there. Special conditions apply. (Permits can usually only be considered for amateur stations located outside the coverage areas of 44 to 51 MHz television stations.)

Two spot frequencies near 5 MHz are available for use by the Amateur Radio Emergency Communications (AREC). Special conditions apply.

Access to the band 614 to 622 MHz for Amateur Television (ATV) repeater use and for other purposes has special conditions which are administered by FMTAG.

Amateur Radio Bandplanning and Frequency Coordination:

NZART has set up a group called FMTAG, the *NZART Frequency Management and Technical Advisory Group*, to coordinate the use of the amateur radio bands in New

Zealand. This is a group of volunteers who advise the NZART Council on technical matters, including those relating to the frequencies to be used for VHF/UHF repeaters and beacons.

The *Amateur Frequency Allocation Chart* (in the GURL) sets down the bands *to which a radio amateur has access*. How radio amateurs can best organise themselves for operations *within those bands* is notified by the *Bandplans* which are published from time-to-time by NZART, usually in the NZART Annual CallBook.

A letter from the New Zealand Administration, the NZ Post Office at that time and published in "*Break-In*", July 1983, pages 2, 3 and 4, made radio amateurs *responsible for their own band-planning*. FMTAG is the NZART response for this national task.

The bandplans are *to ensure that your operations do not impose problems on other operators and that their operations do not impact on you*. It is to the mutual advantage of all operators that the published bandplan provisions be respected.

Please note that all radio amateurs have equal "rights" to use amateur radio frequencies. This means that courtesy in operating must prevail.

It is *correct operating practice* to check that the frequency you propose to use is free from other users **BEFORE** you transmit.

No radio licence confers upon its holder a monopoly on the use of any frequency or frequency band specified on the radio licence. (See the NZ Regulations, *Schedule 1*, 6, in *Appendix 2*.)

Compliance and Enforcement:

The enforcement for non-compliance with, or breaching of, any regulatory condition is a clear *Ministry function*. There is no question about this – it is a statutory function. **The Ministry has compliance auditing and enforcement arrangements in place, active and being strengthened.**

You have worked hard to obtain your AMATEUR RADIO QUALIFICATION. Value it. Don't put it at risk. Be aware of the conditions and restrictions under which you can operate. By world standards these are very liberal. Respect them at all times.

Amateur Radio - a Summary:

As already explained above, all radio amateurs must hold a *General Amateur Operators Certificate of Competency* to operate in the frequency bands and under the terms and conditions given in the *General User Radio Licence for Amateur Radio Operators* and must observe the requirements of the international and national regulations.

Read, re-read, revise, look at the question lists! **Keep up-to-date with any changes too!**

Appendix 1

Extracts from the International Radio Regulations

The International Radio Regulations are important to all New Zealand radio licence holders. The local *New Zealand Radiocommunications Regulations* include the words:

“Any radio transmitter operating under a radio licence must comply with the requirements of the International Radio Regulations (to the extent that they reasonably apply to the category of service specified on the radio licence or exemption)”.

A complete copy of the *International Radio Regulations*, published by the International Telecommunication Union, can be obtained from the ITU at Geneva. It fills several volumes and is *very* expensive (CHF 252). It is also available on CD-ROM at a similar cost.

The following regulations, extracted from the International Radio Regulations, are those of most importance to radio amateurs.

ARTICLE 1

Terms and Definitions

1.2 *Administration*: Any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations.

1.56 *Amateur Service*: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

1.57 *Amateur-Satellite Service*: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

1.157 *peak envelope power* (of a radio transmitter): The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

1.166 *Interference*: The effect of unwanted energy due to one or a combination of *emissions*, *radiations*, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

1.169 *Harmful Interference*: *Interference* which endangers the functioning of a *radionavigation service* or of other *safety services* or seriously degrades, obstructs, or repeatedly interrupts a *radiocommunication service* operating in accordance with these Regulations.

ARTICLE 4

Assignment and Use of Frequencies

Section I. General Rules

4.4 Administrations of the Members shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.

4.9 No provision of these Regulations prevents the use by a station in distress, or by a station providing assistance to it, of any means of radiocommunication at its disposal to attract attention, make known the condition and location of the station in distress, and obtain or provide assistance.

ARTICLE 17

Secrecy

17.1 In the application of the appropriate provisions of the Constitution and the Convention, administrations bind themselves to take the necessary measures to prohibit and prevent:

17.2 a) the unauthorized interception of radiocommunications not intended for the general use of the public;

17.3 b) the divulgence of the contents, simple disclosure of the existence, publication or any use whatever, without authorization of information of any nature whatever obtained by the interception of the radiocommunications mentioned in No. **17.2**.

ARTICLE 18

Licences

18.1 (1) No transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject (however, see Nos. **18.2**, **18.8** and **18.11**).

ARTICLE 22

Space Services

Section I. Cessation of Emissions

22.1 § 1. Space stations shall be fitted with devices to ensure immediate cessation of their radio emissions by telecommand, whenever such cessation is required under the provisions of these Regulations.

ARTICLE 25

Amateur services

Section I – Amateur service

25.1 § 1 Radiocommunication between amateur stations of different countries shall be permitted unless the administration of one of the countries concerned has notified that it objects to such radiocommunications. (WRC-03)

25.2 § 2 1) Transmissions between amateur stations of different countries shall be limited to communications incidental to the purposes of the amateur service, as defined in **No. 1.56** and to remarks of a personal character. (WRC-03)

25.2A 1A) Transmissions between amateur stations of different countries shall not be encoded for the purpose of obscuring their meaning, except for control signals exchanged between earth command stations and space stations in the amateur-satellite service. (WRC-03)

25.3 2) Amateur stations may be used for transmitting international communications on behalf of third parties only in case of emergencies or disaster relief. An administration may determine the applicability of this provision to amateur stations under its jurisdiction. (WRC-03)

25.4 (SUP - WRC-03)

25.5 § 3 1) Administrations shall determine whether or not a person seeking a licence to operate an amateur station shall demonstrate the ability to send and receive texts in Morse code signals. (WRC-03)

25.6 2) Administrations shall verify the operational and technical qualifications of any person wishing to operate an amateur station. Guidance for standards of competence may be found in the most recent version of Recommendation ITU-R M.1544. (WRC-03)

25.7 § 4 The maximum power of amateur stations shall be fixed by the administrations concerned. (WRC-03)

25.8 § 5 1) All pertinent Articles and provisions of the Constitution, the Convention and of these Regulations shall apply to amateur stations. (WRC-03)

25.9 2) During the course of their transmissions, amateur stations shall transmit their call sign at short intervals.

25.9A § 5A Administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief. (WRC-03)

25.9B § 5B An administration may determine whether or not to permit a person who has been granted a licence to operate an amateur station by another administration to operate an amateur station while that person is temporarily in its territory, subject to such conditions or restrictions it may impose. (WRC-03)

Section II – Amateur-satellite service

25.10 § 6 The provisions of Section I of this Article shall apply equally, as appropriate, to the amateur-satellite service.

25.11 § 7 Administrations authorizing space stations in the amateur-satellite service shall ensure that sufficient earth command stations are established before launch to ensure that any harmful interference caused by emissions from a station in the amateur-satellite service can be terminated immediately (see No. **22.1**). (WRC-03)

Appendix 2

Extract from the *New Zealand*:

RADIOCOMMUNICATIONS REGULATIONS 2001

SCHEDULE 1

TERMS, CONDITIONS, AND RESTRICTIONS APPLYING TO EVERY RADIO LICENCE AND EXEMPTION FROM RADIO LICENSING

1. Technical compliance—

Any radio transmitter operating under a radio licence or an exemption must comply with the requirements of the International Radio Regulations (to the extent that they reasonably apply to the category of service specified on the radio licence or exemption), and with any technical specifications or standards that are specified on the radio licence or exemption, or that may be notified from time to time by the chief executive by notice in the *Gazette*.

2. Operational compliance—

The operation of any radio transmitter operating under a radio licence or exemption must comply with the requirements of the International Radio Regulations to the extent that they reasonably apply to the category of radiocommunication service specified on the radio licence or exemption.

3. Responsibility for observance of provisions—

Observance of all terms, conditions, and restrictions relating to a radio licence or exemption by any person authorised to operate a radio transmitter under a radio licence or exemption remains the personal responsibility of the holder of the radio licence or exemption, as the case may be.

4. Notification of change of address—

If a radio licence applies specifically to a radio transmitter at a particular address, the licensee must, within 7 days of removing the radio transmitter from the address, notify the chief executive of the removal.

5. Compliance with directions—

The holder of a radio licence or an exemption must comply with any directions given by the chief executive, or by any person authorised by the chief executive to give directions on the chief executive's behalf, for the use of the radio transmitter operating under the radio licence or exemption.

6. No monopoly conferred—

No radio licence or exemption confers upon the holder of the radio licence or exemption a monopoly on the use of any frequency or frequencies or frequency band or frequency bands specified on the radio licence or exemption.

7. Operator of radio transmitter to hold valid operator certificate—

If a radio licence specifies that the operator of any radio transmitter operating under the radio licence must be the holder of a certificate of competency of the class specified on the radio licence, the radio transmitter must not be operated by any person who is not the holder of a certificate of competency of the required class or of a certificate recognised by the chief executive.

8. Callsigns—

(1) If a radio licence requires the use of a callsign, the callsign of the person operating the radio transmitter in accordance with the radio licence must be—

- (a) the callsign shown on the radio licence; or
- (b) the callsign shown on the certificate of competency of the person who is operating the radio transmitter; or
- (c) a temporary callsign that the operator is authorised to use in accordance with subclause (2).

(2) The chief executive may, by notice in the *Gazette*, authorise a person or a class of persons to use a temporary callsign for the period, and in accordance with the terms and conditions, specified in the notice.

9. Documents must be available for inspection—

The holder of a radio licence or exemption must arrange for the radio licence or exemption, as the case may be, to be available at all times for inspection by an authorised officer.

10. Dismantling of radio transmitter when contravention has taken place—

If an authorised officer is of the opinion that a contravention of the Act or these regulations has taken place and requires that a radio transmitter cease operating, the licensee under the relevant radio licence must comply with the requirement.

Appendix 3

Extract from "The New Zealand Gazette", 15/6/2006: *[The text is spread out here to make it more "readable"]*

Radiocommunications Regulations (General User Radio Licence for Amateur Radio Operators) Notice 2006

Pursuant to Regulation 9 of the [Radiocommunications Regulations 2001](#) ("the Regulations") made under section 116 (1) (b) of the Radiocommunications Act 1989, and acting under delegated authority from the Chief Executive, I give the following notice.

Notice

1. Short title and commencement

1. This notice is the Radiocommunications Regulations (General User Radio Licence for Amateur Radio Operators) Notice 2006.
2. This notice comes into force on 1 July 2006.

2. General user radio licence

A general user radio licence is granted for the transmission of radio waves by amateur radio operators in New Zealand, for the purpose of communications in the amateur radio service in accordance with the terms, conditions and restrictions of this notice.

3. Terms, conditions and restrictions applying to New Zealand amateur operators

1. Persons who hold a General Amateur Operators Certificate of Competency and a callsign issued pursuant to the Regulations, may operate an amateur radio station in New Zealand.
2. The callsign prefix of "ZL" may be substituted with the prefix "ZM" by the callsign holder for the period of, and participation in, a recognised contest, or as the control station for special event communications.
3. Operation on amateur bands between 5 MHz and 25 MHz is not permitted unless a person has held a General Amateur Operators Certificate of Competency for three months and logged 50 contacts during this period. The person must keep the logbook record for at least one year and, during this period, produce it at the request of the chief executive.

4. Terms, conditions and restrictions applying to visiting amateur operators

1. Persons visiting New Zealand who hold a current amateur certificate of competency, authorisation

or licence issued by another administration, may operate an amateur station in New Zealand for a period not exceeding 90 days, provided the certificate, authorisation or licence meets the requirements of Recommendation ITU-R M.1544 or CEPT T/R 61-01 or CEPT T/R 61-02 and is produced at the request of the chief executive.

2. The call sign must be the national callsign allocated by the other administration to that person, in conjunction with the prefix or suffix "ZL" which is to be separated from the national callsign by the character "/" (telegraphy), or the word "stroke" (telephony).

5. Terms, conditions and restrictions applying to all amateur operators

1. The use of callsigns, including temporary and club callsigns, must be in accordance with publication PIB 46 "Radio Operator Certificate and Callsign Rules" published at <http://www.rsm.govt.nz/>.
2. Callsigns must be transmitted at least once every 15 minutes during communications.
3. National and international communication is permitted only between amateur stations, and is limited to matters of a personal nature, or for the purpose of self-training, intercommunication and radio technology investigation, solely with a personal aim and without pecuniary interest. The passing of brief messages of a personal nature on behalf of other persons is also permitted, provided no fees or other consideration is requested or accepted.
4. Communications must not be encoded for the purpose of obscuring their meaning, except for control signals by the operators of remotely controlled amateur stations.
5. Except as provided to the contrary in this notice, transmitter power output must not exceed 500 watts peak envelope power (pX), as defined in ITU Radio Regulation 1.157.
6. In accordance with Article 3 of the International Radio Regulations, amateur stations must, as far as is compatible with practical considerations, comply with the latest ITU-R recommendations to the extent applicable to the amateur service.
7. In accordance with Article 25 of the International Radio Regulations, amateur operators are encouraged to prepare for, and meet the communication needs of, national and international disaster relief.
8. Amateur beacons, repeaters and fixed links may not be established pursuant to this licence.

9. Unwanted emissions outside the frequency bands specified in this schedule must comply with the requirements of technical standard ETSI ETS 300 684 published by the European Telecommunications Standards Institute (ETSI).
10. The ranges of frequencies, and specific conditions of use, are those prescribed in the Schedule to this notice.

6. Consequential revocation of licences

1. The Radiocommunication Regulations (General User Radio Licence for Visiting Amateur Radio Operators) Notice 2004 dated the 2nd day of July 2004 and published in the *New Zealand Gazette*, 8 July 2004, No. 85, page 2118, is revoked.
2. All radio licences of the class Amateur General (H5) granted pursuant to the Regulations, are revoked.

Schedule

Frequency Range	Notes
130 to 190 kHz	2, 4, 6
1.80 to 1.95 MHz	2
3.50 to 3.90 MHz	2
7.00 to 7.10 MHz	1
7.10 to 7.30 MHz	2
10.10 to 10.15 MHz	2
14.00 to 14.35 MHz	1
18.068 to 18.168 MHz	1
21.00 to 21.45 MHz	1
24.89 to 24.99 MHz	1
26.95 to 27.30 MHz	2, 3, 5, 6
28.00 to 29.70 MHz	1
51.00 to 53.00 MHz	2
144.00 to 146.00 MHz	1
146.00 to 148.00 MHz	2
430.00 to 440.00 MHz	1, 2, 3
921.00 to 929.00 MHz	3, 7
1.24 to 1.30 GHz	1, 2
2.396 to 2.45 GHz	1, 3
3.30 to 3.41 GHz	1, 2
5.65 to 5.85 GHz	1, 3
10.00 to 10.50 GHz	1, 2
24.00 to 24.05 GHz	1, 3
24.05 to 24.25 GHz	3
47.00 to 47.20 GHz	1
75.50 to 76.00 GHz	1, 2
76.00 to 81.00 GHz	1, 2
122.25 to 123.00 GHz	2, 3
134.00 to 136.00 GHz	1
136.00 to 141.00 GHz	1, 2
241.00 to 248.00 GHz	1, 2, 3
248.00 to 250.00 GHz	1
275.00 to 1000 GHz	2, 4

Notes to Schedule

1. The following ranges of frequencies may also be used for amateur satellite communications:

7.00 to 7.10 MHz	3.40 to 3.41 GHz
14.00 to 14.25 MHz	5.65 to 5.67 GHz (a)
18.068 to 18.168 MHz	5.83 to 5.85 GHz (b)
21.00 to 21.45 MHz	10.45 to 10.50 GHz
24.89 to 24.99 MHz	24.00 to 24.05 GHz
28.00 to 29.70 MHz	47.00 to 47.20 GHz
144.00 to 146.00 MHz	75.50 to 81.00 GHz
435.00 to 438.00 MHz	134.00 to 141.00 GHz
1.26 to 1.27 GHz(a)	241.00 to 250.00 GHz
2.40 to 2.45 GHz	

- a. Limited to the earth-to-space direction.
- b. Limited to the space-to-earth direction.
2. These frequencies are, or may be, allocated for use by other services. Amateur operators must accept interference from, and must not cause interference to, such other services.
3. The frequencies:

27.12 MHz	(26.957 - 27.283 MHz),
433.92 MHz	(433.05 - 434.79 MHz),
921.5 MHz	(915 - 928 MHz),
2.45 GHz	(2.4 - 2.5 GHz),
5.8 GHz	(5.725 - 5.875 GHz),
24.125 GHz	(24.00 - 24.25 GHz),
122.5 GHz	(122 - 123 GHz), and
245 GHz	(244 - 246 GHz)

are designated for industrial, scientific and medical (ISM) purposes. These frequencies may also be allocated to Short Range Device (SRD) services. Amateur operators must accept interference from ISM and SRD services within these frequency ranges.

4. Allocated to the amateur service on a temporary basis until further notice.
5. Telecommand and telemetry operation only.
6. Radiated power must not exceed 5 watts e.i.r.p.
7. Radiated power must not exceed 25 watts e.i.r.p.

Dated at Wellington this 13th day of June 2006.
SANJAI RAJ, Group Manager, Radio Spectrum Management, Business Services, Ministry of Economic Development.

Explanatory Note

This note is not part of the notice, but is intended to indicate its general effect.

This notice prescribes that, pursuant to Regulations made under the Radiocommunications Act 1989, a general user radio licence is granted for the transmission of radio waves by amateur radio operators in New Zealand, for the purpose of communications in the amateur radio service, in accordance with the terms, conditions, and restrictions of this notice. This notice comes into force on 1 July 2006.

Appendix 4

REGULATIONS - Question Summaries

The Amateur Service may be briefly defined as: *a radiocommunication service for the purpose of self-training, intercommunication and technical investigation*

The organisation responsible for the International Radio Regulations is the: *International Telecommunication Union*

New Zealand's views on international radio regulatory matters are coordinated by the: *Ministry of Economic Development (MED)*

For regulatory purposes the world is divided into regions each with different radio spectrum allocations. New Zealand is in: *Region 3*

The prime document for the administration of the Amateur Service in New Zealand is the: *New Zealand Radiocommunications Regulations*

The administration of the Amateur Service in New Zealand is by: *the Ministry of Economic Development Radio Spectrum Management Group*

An Amateur Station is a station: *in the Amateur Service*

A General Amateur Operator Certificate of Competency can be inspected by an authorised officer from the Ministry of Economic Development: *at any time*

The fundamental regulations controlling the Amateur Service are to be found in: *the International Radio Regulations from the ITU*

You must have a General Amateur Operator Certificate of Competency to: *transmit in bands allocated to the Amateur Service*

A New Zealand General Amateur Operator Certificate of Competency allows you to operate: *anywhere in New Zealand and in any other country that recognises the Certificate*

With a General Amateur Operator Certificate of Competency you may operate transmitters in your station: *any number at one time*

You must keep the following document at your amateur station: *your General Amateur Operator Certificate of Competency*

An Amateur Station is one which is: *operated by the holder of a General Amateur Operator Certificate of Competency on the amateur radio bands*

If the qualified operator of an amateur radio station is absent overseas, the home station may be used by: *any person with an appropriate General Amateur Operator Certificate of Competency*

All amateur stations, regardless of the mode of transmission used, must be equipped with: *a reliable means for determining the operating radio frequency*

An amateur station may transmit unidentified signals: *never, such transmissions are not permitted*

You may operate your amateur radio station somewhere in New Zealand for short periods away from the location entered in the administration's database: *whenever you want to*

Before operating an amateur station in a motor vehicle, you must: *hold a current General Amateur Operator Certificate of Competency*

An applicant for a New Zealand General Amateur Operator Certificate of Competency must first qualify by meeting the appropriate examination requirements. Application may then be made by: *anyone*

An amateur radio operator must have current New Zealand postal and email addresses so the Ministry of Economic Development: *can send mail to the operator*

If you transmit from another amateur's station, the person responsible for its proper operation is: *you, the operator*

Your responsibility as a station operator is that you must: *be responsible for the proper operation of the station in accordance with the Radiocommunications Regulations*

An amateur station must have a qualified operator: *whenever the station is used for transmitting*

A log-book for recording stations worked: *is recommended for all amateur radio operators*

Unqualified persons in your family cannot transmit using your amateur station if they are alone with your equipment because they must: *hold a General Amateur Operator Certificate of Competency before they are allowed to be operators*

Amateur radio repeater equipment and frequencies in New Zealand are co-ordinated by: *the NZART Frequency Management and Technical Advisory Group.*

A qualified operator of an amateur radio station may permit anyone to: *pass brief comments of a personal nature provided no fees or other considerations are requested or accepted*

The minimum age for a person to hold a General Amateur Operator Certificate of Competency is: *there is no age limit*

If you contact another station and your signal is strong and perfectly readable, you should: *reduce your transmitter power output to the minimum needed to maintain contact*

The age when an amateur radio operator is required to surrender the General Amateur Operator Certificate of Competency is: *there is no age limit*

Peak envelope power (PEP) output is the: *average power output at the crest of the modulating cycle*

The maximum power output permitted from an amateur station is: *specified in the amateur radio General User Radio Licence*

The transmitter power output for amateur stations at all times is: *the minimum power necessary to communicate and within the terms of the amateur radio GURL*

You identify your amateur station by transmitting your: *callsign*

This callsign could be allocated to an amateur radio operator in New Zealand: *ZL2HF*

The callsign of a New Zealand amateur radio station: *is listed in the administration's database*

These letters are generally used for the first letters in New Zealand amateur radio callsigns: *ZL*

The figures normally used in New Zealand amateur radio callsigns are: *a single digit, 1 through 4*

Before re-issuing, a relinquished callsign is normally kept for: *1 year*

A General Amateur Operator Certificate of Competency authorises the use of: *amateur radio transmitting apparatus only*

General Amateur Operator Certificates of Competency and callsigns are issued pursuant to the Regulations by the: *Ministry of Economic Development Approved Radio Examiners*

To replace a written copy of your General Amateur Operator Certificate of Competency you should: *Download and print one from the official database (or have an Approved Radio Examiner do this for you)*

A General Amateur Operator Certificate of Competency holder must advise permanent changes to postal and email addresses and update the official database records within: *7 days*

A General Amateur Operator Certificate of Competency: *contains the unique callsign(s) to be used by that operator*

A General Amateur Operator Certificate of Competency is normally issued for: *life*

A licence that provides for a given class of radio transmitter to be used without requiring a licence in the owner's own name is known as: *a general user radio licence*

The holder of a General Amateur Operator Certificate of Competency may permit anyone to: *pass brief messages of a personal nature provided no fees or other consideration are requested or accepted*

International communications on behalf of third parties may be transmitted by an amateur station only if: *such communications have been authorised by the countries concerned*

The term "amateur third party communications" refers to: *messages to or on behalf of non-licensed people or organisations*

The Morse code signal SOS is sent by a station: *in grave and imminent danger and requiring immediate assistance*

If you hear distress traffic and are unable to render assistance, you should: *maintain watch until you are certain that assistance is forthcoming*

The transmission of messages in a secret code by the operator of an amateur station is: *not permitted except for control signals by the licensees of remote beacon or repeater stations*

Messages from an amateur station in the following are expressly forbidden: *secret cipher*

The term "harmful interference" means: *interference which obstructs or repeatedly interrupts radiocommunication services*

When interference to the reception of radiocommunications is caused by the operation of an amateur station, the station operator: *must immediately comply with any action required by the MED to prevent the interference*

An amateur radio operator may knowingly interfere with another radio communication or signal: *never*

After qualifying and gaining a General Amateur Operator Certificate of Competency you are permitted to: *first operate for three months on amateur radio bands below 5 MHz and bands above 25 MHz to log fifty or more contacts*

Morse code is permitted for use by: *any amateur radio operator*

As a New Zealand amateur radio operator you may communicate with: *other amateur stations world-wide*

As a New Zealand amateur radio operator you: *may train for and support disaster relief activities*

Your General Amateur Operator Certificate of Competency permits you to: *establish and operate an earth station in the amateur satellite service*

You hear a station using the callsign "VK3XYZ stroke ZL" on your local VHF repeater. This is: *the station of an overseas visitor*

The abbreviation "HF" refers to the radio spectrum between: *3 MHz and 30 MHz*

Bandplans showing the transmission modes for New Zealand amateur radio bands are developed and published for the mutual respect and advantage of all operators: *to ensure that your operations do not*

impose problems on other operators and that their operations do not impact on you

The abbreviation "VHF" refers to the radio spectrum between: *30 MHz and 300 MHz*

An amateur radio operator must be able to: *verify that transmissions are within an authorised frequency band*

An amateur station may be closed down at any time by: *a demand from an authorised official of the Ministry of Economic Development*

A General Amateur Operator Certificate of Competency: *does not confer on its holder a monopoly on the use of any frequency or band*

A person in distress: *may use any means available to attract attention*

Appendix 5 The Q-code

Newcomers are often puzzled by the codes and abbreviations used by radio amateurs. These codes make international communication possible with operators with little knowledge of English and they save time conveying information.

A full listing of the Q-code can be found in publications of the International Telecommunication Union.

Listed below are some Q-codes used by radio amateurs.

The Q-code is used in two ways - with or without a question mark. Sometimes a figure, a call sign or a frequency, accompanies a Q-code. For example:

QTC? (note the question mark) means "have you any messages for me?".

QTC3 means "I have three messages for you".

QRG Will you tell me my exact frequency (or that of ...)? Your exact frequency (or that of ...) is ... kHz

QRH Does my frequency vary? Your frequency varies

QRK How intelligible are my transmissions? The intelligibility of your signal is ... (1, 2, 3, 4, 5)

QRL Are you busy? I am busy

QRM Am I being interfered with? You are 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

QRS Shall I send slower? Send slower

QRT Shall I stop sending? Stop sending

QRW Shall I inform ... that you are calling him on ... kHz? Please inform ... that I am calling on ... kHz

QRX When will you call me again? I will call you again at ... hours.

QRZ Who is calling me? You are being called by ...

QSA What is my signal strength? Your signal strength is ... (1, 2, 3, 4, 5)

QSB Are my signals fading? Your signals are fading

QSK Can you hear me between your signals? I can hear you between my signals

QSL Please acknowledge receipt. I acknowledge receipt

QSO Can you communicate with ... ? I can communicate with ...

QSY Shall I shift frequency? Shift frequency to ...

QTC Have you any messages? I have ... messages for you

QTH What is your location? My location is ...

Appendix 6

The Amateur Radio Examination

Version 6, June 2004

General Amateur Operator's Certificate Prescription

An applicant will demonstrate by way of written examination a theoretical knowledge of:

- the legal framework of New Zealand radiocommunications
- the methods of radiocommunication, including radiotelephony, radiotelegraphy, data and image
- radio system theory, including theory relating to transmitters, receivers, antennas, propagation and measurements
- electromagnetic radiation
- electromagnetic compatibility
- avoidance and resolution of radio frequency interference.

Amateur Examination Procedure and Format

The examination questions are taken from a question-bank of 600 questions. All questions are in the public domain.

There are thirty study topics. Each contains a multiple of ten questions.

One question out of every ten questions is randomly selected from each topic to make up each

examination paper. Each examination paper has 60 questions and is unique.

A description of each topic follows in number sequence. The number of questions which will be selected for each examination paper is shown in brackets.

The total number of questions in each topic is ten times the number to be selected from it.

Syllabus

A. Regulatory Matters

1. Regulations: (7 questions)

The regulatory environment.
The amateur radio licence, who issues them, payment of fees.
Callsigns.
Power permitted.
Limitations on third party and emergency operation.
Ciphers and secret codes.

2. Frequencies: (2 questions)

Frequencies and bands allocated for amateur radio operating.
Sharing of bands.

B. Basic Electrical Theory

3. Electronics Fundamentals: (2 questions)

Atoms and sub-atomic particles, electrons, ions.
Insulators, conductors and semiconductors.
Fields produced by currents and magnets.
Units of voltage, current, resistance, impedance.
Types of cells.

4. Measurement Units: (1 question)

Units of voltage, current, resistance, impedance, power.

5. Ohm's Law: (2 questions)

Calculations involving voltage, current, resistance (using a single resistor).

6. Resistance: (3 questions)

Values of resistors in series and parallel (using two resistors and more).
Calculations involving resistor combinations, voltage, current.
Internal resistance of cells.

7. Power calculations: (2 questions)

Power calculations given two of voltage, current, resistance.
Power in resistors connected in series and parallel.

8. Alternating current: (1 question)

Frequencies, waveforms and units.
Waveform shapes, rms, peak values.

9. Capacitors, Inductors, Resonance: (2 questions)

Variation of capacitance with plate size, spacing.
Dielectrics.
Variation of inductance with diameter, length, number of turns (descriptive only).
C and L in series and parallel.
Reactance variation of C, L, with frequency.
Impedance.
Toroidal inductors.
Transformers, turns ratios, voltage transformation.
Series and parallel resonance of L and C.
Q values.

10. Safety: (1 question)

Basic procedures for removing persons from live circuits.

Action of a RCD (residual current device), fuse, isolating transformer.

Grounding.

Colour codes and names of mains wiring.

Purpose of the ground lead, how it should be connected.

11. Semiconductors: (2 questions)

Basic properties of semiconductor materials.

Basic properties and uses of diodes, zener diodes, transistors.

12. Device recognition: (1 question)

Recognition of electrode names of bi-polar transistors, FETs, valves, from diagrams.

13. Meters and Measuring: (1 question)

The basic function of voltmeters, ammeters, SWR bridges, power meters, the impedances they present to circuits, how they should be connected.

Peak and rms values.

14. Decibels, Amplification and Attenuation: (1 question)

Power, voltage and current ratios expressed in dB.

Gain in dB of systems connected in cascade.

C. An Amateur Radio Station**15. HF Station Arrangement: (1 question)**

Understanding the block diagram of a typical HF station, showing how a transceiver is connected to a linear amplifier, low pass filter.

SWR bridge, antenna switch, antenna tuner, dummy load and antenna.

The basic function of each block.

D. The Radio Receiver**16. Receiver Block Diagrams: (2 questions)**

Block diagrams of SSB, CW, FM receivers.

Understanding the purpose of each block.

17. Receiver Operation: (3 questions)

Sensitivity, selectivity, receiver noise.

Operation of superhet, RF amplifier, IF amplifier, mixer, frequency translation, images, product detector, BFO, AGC, audio amplifier, single and double conversion.

E. The Radio Transmitter**18. Transmitter Block Diagrams: (2 questions)**

Block diagrams of SSB, CW, FM transmitters.

Understanding the purpose of each block.

Properties of the signals produced.

Linear and non-linear amplification.

19. Transmitter Theory: (1 question)

Meaning of "SSB", "CW", "FM", properties of their signals. Causes of distortion.

Power distribution in transmitters.

20. Harmonics and Parasitics: (2 questions)

Harmonic frequencies.

Causes of harmonic and parasitic generation in transmitters, filtering to reduce them.

F. Power Supplies**21. Power supplies: (1 question):**

Cells. Mains input DC power supplies.

Purpose of diodes, capacitors, transformers.

Fullwave and halfwave rectification, ripple frequencies.

22. Regulated Power supplies: (1 question):

Arrangement of transformer, rectifier, filter, regulator sections.

Recognition and basic purpose of each from a block diagram.

Purpose of fuses, crowbars.

Basic operation of switched mode power supplies, advantages and disadvantages.

G. Operating an Amateur Radio Station**23. General Operating Procedures: (1 question)**

Standard calling, answering, conversing procedures and conventions.

Initiating and terminating contacts.

Callsign exchanges.

24. Practical Operating Knowledge: (2 questions)

Recognition of common terms (pileup, reverse etc).

Repeater procedures, standard New Zealand splits.

Repeater Linking.

Operation of standard controls on transmitters and receivers.

25. Q signals: (1 question)

Common Q signals used in Amateur Radio communications.

H. From Transmitter to Receiver**26. Transmission lines: (2 questions)**

Construction of coaxial and twin-lead transmission lines.

Balanced and unbalanced lines.

Characteristic impedance.

Line losses. Standing waves, SWR.

27. Antennas: (4 questions)

Lengths of dipoles, verticals, for different frequencies.

Impedances, feedpoint position.

Matching.

Antenna bandwidth.

Elements of a yagi antenna, direction of radiation.

E and H fields around antennas.

Polarisation.

Tuning antennas with inductance.

Baluns.

Dummy antenna.

Isotropic antenna.

28. Propagation: (5 questions)

Basic phenomena in HF, VHF, UHF propagation.

Layers which refract signals.

D layer absorption.

Skip zones, hops, MUF, LUF, OWF.

Solar cycle.

Sky waves, ground waves.

Sporadic E.
Great circle paths, radiation angles. Fading.
Doppler caused by satellite motion.

Causes and reduction of BCI, TVI.
Gain, impedance, basic properties of operational
amplifiers.
Op-amps in active filters.

I. Interference and How to Fix it

29. Interference & filtering: (3 questions)

Causes and remedying of key-clicks.
Causes and recognition of cross modulation,
unwanted harmonics.
Definitions of low-pass, band-pass, band-reject,
notch and high-pass filters.
Using filters for interference reduction.
EMC concepts.

J. Digital Systems

30. Digital Systems: (1 question)

Basic digital communication principles, names of
common digital modes.
Principles of BBS systems.
Modems, TNCs.

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Founded 16 August 1926

It serves you at local, national and international levels.

It deserves our full support if we are to continue to have the frequencies and operating privileges we currently enjoy.

Founder Member of the International Amateur Radio Union Region 3



The International Amateur Radio Union Region 3

Formed in 1968, to promote the special interests of the Member Societies in Region 3 of the International Telecommunication Union, and to present their interests at ITU Radio Conferences

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