

The ABC's

Questions from the Industry Canada Question Bank for Basic Qualification

(To Assist You in Learning Vocabulary and Terminology)

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Regulations and Operating Procedures

Part A (of A to C)

Authority to make "Radiocommunication Regulations" is derived from:

- * the Radiocommunication Act

Authority to make "Standards for the Operation of Radio Stations in the Amateur Radio Service" is derived from:

- * the Radiocommunication Act

The Department that is responsible for the administration of the Radiocommunication Act is:

- * Industry Canada

What must you do to notify your mailing address changes?

- * Contact Industry Canada and provide details of your address change

An Amateur Radio Operator Certificate is valid for:

- * for life

The fee for an Amateur Radio Operator Certificate is:

- * Free

The Amateur Radio Operator Certificate should be:

- * retained at the address notified to Industry Canada

Out of amateur band transmissions:

- * are prohibited - penalties could be assessed to the control operator

If an amateur pretends there is an emergency and transmits the word "MAYDAY," what is this called?

- * False or deceptive signals

What age must you be to hold an Amateur Radio Operator Certificate with Basic Qualification?

- * There are no age limits

Where a friend is not the holder of any type of radio operator certificate, you, as a holder of an Amateur Radio Operator Certificate with Basic Qualification, may, on behalf of your friend:

- * not install, place in operation, modify, repair, maintain, or permit the operation of the radio apparatus

An amateur station with a maximum input to the final stage of 2 watts:

- * must be licensed at all locations

An amateur station may be used to communicate with:

- * similarly licensed stations

Which of the following CANNOT be discussed on an amateur club net?

- * Business planning

When may false or deceptive amateur signals or communications be transmitted?

- * Never

When may you send indecent or profane words from your amateur station?

- * Never

When may an amateur station in two-way communication transmit a message in a secret code in order to obscure the meaning of the communication?

- * Never

Where may the holder of an Amateur Radio Operator Certificate operate an amateur radio station in Canada?

- * anywhere in Canada

Amateur radio operators may install or operate radio apparatus:

- * at any location in Canada

If you transmit from another amateur's station, who is responsible for its proper operation?

- * Both of you

What is your responsibility as a station owner?

- * You are responsible for the proper operation of the station in accordance with the regulations

Why can't family members without qualifications transmit using your amateur station if they are alone with your equipment?

- * They must hold suitable amateur radio qualifications before they are allowed to be control operators

What is a transmission called that disturbs other communications?

- * Harmful interference

When may you deliberately interfere with another station's communications?

- * Never

What rule applies if two amateur stations want to use the same frequency?

- * Both station operators have an equal right to operate on the frequency

What name is given to a form of interference that seriously degrades, obstructs or repeatedly interrupts a radiocommunication service?

- * Harmful interference

If you hear an unanswered distress signal on an amateur band where you do not have privileges to communicate:

- * you should offer assistance

During an emergency, what power output limitations must be observed by a station in distress?

- * There are no limitations during an emergency

It is permissible to interfere with the working of another station if:

- * your station is directly involved with a distress situation

What kind of payment is allowed for third-party messages sent by an amateur station?

- * No payment of any kind is allowed

The operator of an amateur station:

- * shall not demand or accept remuneration in any form, in respect of a radiocommunication that the person transmits or receives

What do you transmit to identify your amateur station?

- * Your call sign

What identification, if any, is required when two amateur stations begin communications?

- * Each station must transmit its own call sign

What identification, if any, is required when two amateur stations end communications?

- * Each station must transmit its own call sign

What is the longest period of time an amateur station can operate, without transmitting its call sign?

- * 30 minutes

If you let an unqualified third party use your amateur station, what must you do at your station's control point?

- * You must continuously monitor and supervise the third party's Participation

Radio amateurs may use their stations to transmit international communications on behalf of a third party only if:

- * such communications have been authorized by the countries concerned

A person operating a Canadian amateur station is forbidden to communicate with amateur stations of another country:

- * when that country has notified the [International Telecommunication Union](#) that it objects to such communications

International communications on behalf of third parties may be transmitted by an amateur station only if:

- * the countries concerned have authorized such communications

If you let another amateur with additional qualifications than yours control your station, what operating privileges are allowed?

- * Only the privileges allowed by your qualifications

If you are the control operator at the station of another amateur who has additional qualifications to yours, what operating privileges are you allowed?

- * Only the privileges allowed by your qualifications

In addition to passing the Basic written examination, what must you do before you are allowed to use amateur frequencies below 30 MHz?

- * You must pass a Morse code or Advanced test or attain a mark of 80% on the Basic exam

The maximum bandwidth of an amateur station's transmission allowed in the band 144 to 148 MHz is:

- * 30 kHz

The maximum [bandwidth](#) of an amateur station's transmission allowed in the band 50 to 54 MHz is:

- * 30 kHz

What amount of transmitter power must radio amateurs use at all times?

- * The minimum legal power necessary to communicate

What kind of amateur station automatically retransmits the signals of other stations?

- * Repeater station

An amateur station using [radiotelephony](#) must install a device for indicating or preventing:

- * overmodulation

The maximum percentage of modulation permitted in the use of radiotelephony by an amateur station is:

- * 100 percent

What type of messages may be transmitted to an amateur station in a foreign country?

- * Messages of a technical nature or personal remarks of relative Unimportance

The operator of an amateur station shall ensure that:

- * communications are limited to messages of a technical or personal nature

In addition to complying with the Act and Radiocommunication Regulations, Canadian radio amateurs must also comply with the regulations of the:

- * International Telecommunication Union

In which International Telecommunication Union Region is Canada?

- * Region 2

A Canadian radio amateur, operating his station in the state of Florida, is subject to which frequency band limits?

* Those applicable to US radio amateurs

A Canadian radio amateur, operating his station 7 kilometres (4 miles) offshore from the coast of Florida, is subject to which frequency band limits?

* Those applicable to US radio amateurs

Canada is located in ITU Region:

* region 2

The fee for taking examinations for amateur radio operator certificates by an accredited volunteer examiner is:

* Accredited examiners may not charge this fee; however, they may recover, from the candidate, the cost of administering an examination.

The fee for taking amateur radio certificate examinations at an Industry Canada office is:

* \$20

Before erecting an antenna structure, for which community concerns could be raised, a radio amateur must consult with:

* the land-use authority, and possibly the neighbours

What organization has published [safety guidelines](#) for the maximum limits of RF energy near the human body?

* Health Canada

What is a good way to make contact on a repeater?

* Say the call sign of the station you want to contact, then your call Sign

What is the main purpose of a repeater?

- * To increase the range of portable and mobile stations

Why should you pause briefly between transmissions when using a repeater?

- * To listen for anyone else wanting to use the repeater

What is the proper way to break into a conversation on a repeater?

- * Say your call sign during a break between transmissions

To make your call sign better understood when using voice transmissions, what should you do?

- * Use [Standard International Phonetics](#) for each letter of your call sign

What is the Standard International Phonetic for the letter A?

- * Alpha

What is the Standard International Phonetic for the letter B?

- * Bravo

What is the Standard International Phonetic for the letter D?

- * Delta

Please learn all:

- * Alpha, Bravo, Charlie, Delta, Echo, Foxtrot, Golf, Hotel, India, Juliet, Kilo, Lima, Mike, November, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Uniform, Victor, Whiskey, X-ray, Yankee, Zulu

What is the correct way to [call "CQ"](#) when using voice?

- * Say "CQ" three times, followed by "this is," followed by your call sign spoken three times

How should you answer a voice CQ call?

- * Say the other station's call sign once, followed by "this is," then your call sign given phonetically

What is [simplex operation](#)?

- * Transmitting and receiving on the same frequency

When should you use simplex operation instead of a repeater?

- * When a contact is possible without using a repeater

What should you do before you transmit on any frequency?

- * Listen to make sure others are not using the frequency

If a [net](#) is about to begin on a frequency which you and another station are using, what should you do?

- * As a courtesy to the net, move to a different frequency

What is a band plan?

- * A guideline for using different operating modes within an amateur band

Before transmitting, the first thing you should do is:

- * listen carefully so as not to interrupt communications already in progress

What is the correct way to call "CQ" when using Morse code?

- * Send the letters "CQ" three times, followed by "DE", followed by your call sign sent three times

What is the meaning of the procedural signal "CQ"?

- * Calling any station

What is meant by the term "[DX](#)"?

- * Distant station

What is the meaning of the term "[73](#)"?

- * Best regards

Good Morse telegraphy operators:

- * listen to the frequency to make sure that it is not in use before transmitting

What are "[RST](#)" signal reports?

- * A short way to describe signal reception

What does "RST" mean in a signal report?

- * Readability, signal strength, tone

What is used to measure relative signal strength in a receiver?

- * An [S meter](#)

What is one meaning of the Q signal "[QTH](#)"?

* My location is

What is the proper Q signal to use to ask if someone is calling you on CW?

* [QRZ](#)?

"Who is calling me" is denoted by the "Q signal":

* [QRZ](#)?

When may you use your amateur station to transmit an "[SOS](#)" or "[MAYDAY](#)"?

* In a life-threatening distress situation

If you are in contact with another station and you hear an emergency call for help on your frequency, what should you do?

* Immediately stop your contact and take the emergency call

What is the most important accessory to have for a hand-held radio in an emergency?

* Several sets of charged batteries

If you hear distress traffic and are unable to render assistance you should:

* maintain watch until you are certain that assistance will be forthcoming

What is a "[QSL card](#)"?

* A written proof of communication between two amateurs

What method is used by radio amateurs to provide written proof of communication between two amateur stations?

* A signed post card listing contact date, time, frequency, mode and power, called a "QSL card"

Station logs and confirmation (QSL) cards are always kept in [UTC](#) (Universal Time Coordinated). Where is that time based?

* Greenwich, England

When referring to contacts in the station log, what do the letters UTC mean?

* Universal Time Coordinated (formerly Greenwich Mean Time - GMT)

Here are all of the Q-codes. These are used on the HF bands, so if you're planning to use HF (skipping signals a long distance around the world) then you should probably learn all of them. They're not normally used on UHF and VHF and you are advised not to use them in verbal conversation. The reason is quite simple. Many radio amateurs have become certified purely to be volunteer communicators for their local emergency programs.

Please memorize the following table of [Q-codes](#):

Q-code: meaning as a question:

"QRS" Send more slowly Can you send slower?

"QTH" My location is What's your location?

"QRL" I am busy Are you busy?

"QSY" Change frequency Can you change freq?

"QSO" A contact is in progress Do you have a contact in progress?

"QRZ" You're being called by Who is calling?

"QRM" I am being interfered with Are you being interfered with?

"QRN" I am troubled by static Are you troubled by static?

"QRX" I will call you again Will you call me again?

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Regulations and Operating Procedures

Part B (of A to C)

In designing an HF station, which component would you use to reduce the effects of harmonic radiation?

- * Low pass filter

Which component in an HF station is the most useful for determining the effectiveness of the antenna system?

- * [SWR bridge](#)

Of the components in an HF station, which component would be used to match [impedances](#) between the [transceiver](#) and antenna?

- * [Antenna tuner](#)

In an HF station, which component is temporarily connected in the tuning process?

- * [Dummy load](#)

In a frequency [modulation](#) transmitter, the input to the speech amplifier is connected to the:

- * [microphone](#)

In a frequency modulation transmitter, the microphone is connected to the:

- * [speech amplifier](#)

In a [frequency modulation](#) receiver, the _____ is located between the speaker and/or headphones and the [frequency discriminator](#).

* audio frequency amplifier

In a frequency modulation receiver, the _____ connects to the audio frequency amplifier output

* speaker and/or headphones

In a typical CW transmitter, the _____ is the primary source of direct current.

* power supply

In a CW transmitter, the _____ is in between the driver/buffer stage and the antenna.

* [power amplifier](#)

In a CW transmitter, the output of the _____ is transferred to the antenna.

* power amplifier

In a [single sideband](#) and [CW](#) receiver, the antenna is connected to the _____ .

* [radio frequency amplifier](#)

In a single sideband and CW receiver, the _____ is connected to the output of the audio frequency amplifier.

* speaker and/or headphones

In a single sideband transmitter, the _____ is connected to the speech amplifier.

* microphone

In a single sideband transmitter, the output of the linear amplifier is connected to the _____.

* antenna

In a digital system, the modem is connected to the _____.

* computer

In a [regulated power supply](#), the _____ is between the input and the rectifier.

* transformer

In a [Yagi-Uda](#) 3 element directional antenna, the _____ is the longest radiating element.

* reflector

What kind of filter would you use to attenuate an interfering carrier signal while receiving an SSB transmission?

* A [notch filter](#)

A mismatched antenna or [feedline](#) may present an incorrect load to the transmitter. The result may be:

* excessive heat produced in the final transmitter stage

One result of a slight mismatch between the power amplifier of a transmitter and the antenna would be:

* reduced antenna radiation

In a SSB transmission, the carrier is:

* reinserted at the receiver

What may your FM hand-held or mobile transceiver do if you shout into its microphone?

- * It may cause interference to other stations operating near its Frequency

What can you do if you are told your FM hand-held or mobile transceiver is over-deviating?

- * Talk farther away from the microphone

Why is FM voice best for local VHF/UHF radio communications?

- * It has high-fidelity audio which can be understood even when the signal is somewhat weak

FM receivers perform in an unusual manner when two or more stations are present. The loudest signal, even though it is only two or three times as loud as the other signals, will be the only transmission demodulated. This is called:

- * capture effect

Where would you connect a microphone for voice operation?

- * To a transceiver

What would you connect to a transceiver for voice operation?

- * A microphone

Why might a dummy antenna get warm when in use?

- * Because it changes RF energy into heat

What is a [digipeater](#)?

- * A packet-radio station that retransmits only data that is marked to be retransmitted

How much voltage does a standard automobile battery usually supply ?

- * About 12 volts

Which component has a positive and a negative side?

- * A battery

To increase the voltage output, several cells are connected in:

- * series

A [nickel-cadmium battery](#) should never be:

- * short-circuited

If your mobile transceiver works in your car but not in your home, what should you check first?

- * The power supply

What device converts household current to 12 VDC?

- * A power supply

Power-line voltages have been made standard over the years and the voltages generally supplied to homes are approximately:

- * 120 and 240 volts

You have a very loud low- frequency hum appearing on your transmission. In what part of the transmitter would you first look for the trouble?

- * the power supply

Which body organ can be fatally affected by a very small amount of electrical current?

- * The heart

What should you do if you discover someone who is being burned by high voltage?

- * Turn off the power, call for emergency help and give CPR if needed

What is the safest method to remove an unconscious person from contact with a high voltage source?

- * Turn off the high voltage switch before removing the person from contact with the source

Fault finding in a power supply of an amateur transmitter while the supply is operating is not a recommended technique because of the risk of:

- * [electric shock](#)

For best protection from electrical shock, what should be grounded in an amateur station?

- * All station equipment

If a separate ground system is not possible for your amateur station, an alternative indoor grounding point could be:

- * a metallic cold water pipe

To protect you against electrical shock, the chassis of each piece of your station equipment should be connected to:

- * a good ground connection

The purpose of using a three- wire power cord and plug on amateur radio equipment is to:

- * prevent the chassis from becoming live in case of an internal short to the chassis

Why should you ground all antenna and rotator cables when your amateur station is not in use?

- * To protect the station and building from lightning damage

How can an antenna system be protected from lightning damage?

- * Ground all antennas when they are not in use

Why should your outside antennas be high enough so that no one can touch them while you are transmitting?

- * Touching the antenna might cause RF burns

Why should you make sure that no one can touch an open-wire feed line while you are transmitting with it?

- * Because high-voltage radio energy might burn the person

Why should you make sure the antenna of a hand-held transceiver is not close to your head when transmitting?

- * To reduce your exposure to the radio-frequency energy

How should you position the antenna of a hand-held transceiver while you are transmitting?

- * Away from your head and away from others

How can exposure to a large amount of RF energy affect body tissue?

- * It heats the tissue

Which body organ is the most likely to be damaged from the heating effects of RF radiation?

- * Eyes

A circuit designed to increase the level of its input signal is called:

- * an [amplifier](#)

To increase the level of very weak radio signals from an antenna, you would use:

- * an RF amplifier

To increase the level of very weak signals from a microphone you would use:

- * an audio amplifier

The increase in signal level by an amplifier is called:

- * [gain](#)

A device with gain has the property of:

- * amplification

The action of changing alternating current to direct current is called:

- * [rectification](#)

What semi-conductor device glows red, yellow, or green, depending upon its chemical composition?

- * A [light-emitting diode](#)

Which component can amplify a small signal using low voltages?

- * A [PNP transistor](#)

The basic semi-conductor amplifying device is the:

- * [transistor](#)

If a low level signal is placed at the input to a transistor, a higher level of signal is produced at the output lead. This effect is known as:

- * amplification

A transistor can be destroyed in a circuit by:

- * excessive heat

The two basic types of [field effect transistors](#) (FET) are:

- * N and P channel

A feature common to tubes and transistors is that both:

- * can amplify signals

What is inside the envelope of a [triode tube](#)?

- * a vacuum

What are the possible values of a 100 ohm [resistor](#) with a 10% tolerance?

- * 90 to 110 ohms

A kilohm is:

- * 4. 1000 ohms

6.6 kilovolts is equal to:

* 6600 volts

One megahertz is equal to:

* 1 000 kHz

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Regulations and Operating Procedures

Part C (of A to C)

Name three good [electrical conductors](#).

* Gold, silver, aluminum

Name four good [electrical insulators](#).

* Glass, air, plastic, porcelain

The most common material used to make a resistor is:

* carbon

What is the word used to describe how fast electrical energy is used?

* [Power](#)

If you have light bulbs marked 40 watts, 60 watts and 100 watts, which one will use electrical energy the fastest?

* The 100 watt bulb

What is the basic unit of electrical power?

* The watt

Which electrical circuit will have no current?

- * An open circuit

If a current of 2 amperes flows through a 50-ohm resistor, what is the voltage across the resistor?

- * 100 volts

A lamp has a resistance of 30 ohms and a 6 volt battery is connected. The current flow will be:

- * 0.2 ampere

Five 10 ohm resistors connected in series equals:

- * 50 ohms

Why would a large size resistor be used instead of a smaller one of the same resistance?

- * For greater power dissipation

When two 500 ohm 1 watt resistors are connected in parallel, they can dissipate a maximum total power of:

- * 2 watts

One advantage of replacing a 50 ohm resistor with a parallel combination of two similarly rated 100 ohm resistors is that the parallel combination will have:

- * the same resistance but greater power rating

Resistor wattage ratings are:

- * determined by heat dissipation qualities

What term means the number of times per second that an alternating current flows back and forth?

* [Frequency](#)

Electrical energy at a frequency of 7125 kHz is in what frequency range?

* [Radio](#)

What is the name for the distance an AC signal travels during one complete cycle?

* [Wavelength](#)

What does 60 hertz (Hz) mean?

* 60 cycles per second

A two-times increase in power results in a change of how many dB?

* 3 dB higher

The unit "[decibel](#)" is used to indicate:

* a mathematical ratio

The power output from a transmitter increases from 1 watt to 2 watts. This is a db increase of:

* 3

If two equal-value [capacitors](#) are connected in parallel, what is their total capacitance?

* Twice the value of one capacitor

In [inductances](#), AC may be opposed by both resistance of winding wire and reactance due to inductive effect. The term which includes resistance and reactance is:

* [Impedance](#)

A force of repulsion exists between two _____ magnetic poles.

* like

A [permanent magnet](#) would most likely be made from:

* steel

A [tuned circuit](#) is formed from two basic components. These are:

* inductors and capacitors

How is a [voltmeter](#) usually connected to a circuit under test?

* In parallel with the circuit

How is an [ammeter](#) usually connected to a circuit under test?

* In series with the circuit

What does a [multimeter](#) measure?

* Voltage, current and resistance

In measuring volts and amperes, the connections should be made with:

* the voltmeter in [parallel](#) and ammeter in [series](#)

What connects your transceiver to your antenna?

- * A feed line

What commonly available antenna feed line can be buried directly in the ground for some distance without adverse effects?

- * [coaxial cable](#)

What is a coaxial cable?

- * A center wire inside an insulating material which is covered by a metal sleeve or shield

What is the best antenna feed line to use, if it must be put near grounded metal objects?

- * Coaxial cable

What commonly available antenna feed line can be buried directly in the ground for some distance without adverse effects?

- * Coaxial cable

When antenna feed lines must be placed near grounded metal objects, which of the following feed lines should be used?

- * Coaxial cable

If your transmitter and antenna are 15 metres apart, but are connected by 65 metres of RG-58 coaxial cable, what should be done to reduce feed line loss?

- * Shorten the excess cable

As the length of a feed line is changed, what happens to signal loss?

- * Signal loss increases as length increases

What does an SWR reading of 1:1 mean?

- * The best impedance match has been attained

What does an SWR reading of less than 1.5:1 mean?

- * A fairly good impedance match

What kind of SWR reading may mean poor electrical contact between parts of an antenna system?

- * A jumpy reading

An SWR meter measures the degree of match between transmission line and antenna by:

- * comparing forward and reflected voltage

What device might allow use of an antenna on a band it was not designed for?

- * An antenna tuner

When will a power source deliver maximum output to the load?

- * When the impedance of the load is equal to the impedance of the source

What happens when the impedance of an electrical load is equal to the internal impedance of the power source?

- * The source delivers maximum power to the load

The reason that an RF transmission line should be matched at the transmitter end is to:

- * transfer the maximum amount of power to the antenna

An [isotropic antenna](#) is a:

- * hypothetical point source

A dipole antenna will emit a vertically polarized wave if it is:

- * mounted vertically

If an [electromagnetic wave](#) leaves an antenna vertically polarized, it will arrive at the receiving antenna, by ground wave:

- * vertically polarized

If an antenna is made longer, what happens to its resonant frequency?

- * It decreases

If an antenna is made shorter, what happens to its resonant frequency?

- * It increases

The property of an antenna, which defines the range of frequencies to which it will respond, is called its:

- * bandwidth

What is an advantage of downward sloping radials on a ground plane antenna?

- * It brings the feed point impedance closer to 50 ohms

Which of the following transmission lines will give the best match to the base of a quarter-wave ground-plane antenna?

- * 50 ohms coaxial cable

The main characteristic of a vertical antenna is that it will:

- * receive signals equally well from all compass points around it

How many directly driven elements do most Yagi antennas have?

- * One

A dipole transmitting antenna, placed so that the ends are pointing North/South, radiates:

- * mostly to the East and West

What is a cubical quad antenna?

- * Two or more parallel four- sided wire loops, each approximately one-electrical wavelength long

What is a delta loop antenna?

- * A type of cubical quad antenna, except with triangular elements rather than square

What type of propagation usually occurs from one hand- held VHF transceiver to another nearby?

- * Line-of-sight propagation

The radio wave which follows a path from the transmitter to the ionosphere and back to earth is known correctly as the:

- * ionospheric wave

What causes the ionosphere to form?

- * Solar radiation ionizing the outer atmosphere

When is the ionosphere most ionized?

- * Midday

When is the ionosphere least ionized?

- * Shortly before dawn

What is a skip zone?

- * An area which is too far away for ground-wave propagation, but too close for sky-wave propagation

Skip zone is:

- * a zone between the end of the ground wave and the point where the first refracted wave returns to earth

On the VHF and UHF bands, polarization of the receiving antenna is very important in relation to the transmitting antenna, yet on HF bands it is relatively unimportant. Why is that so?

- * The ionosphere can change the polarization of the signal from moment to moment

How do sunspots change the ionization of the atmosphere?

- * The more sunspots there are, the greater the ionization

How long is an average sunspot cycle?

- * 11 years

All communication frequencies throughout the spectrum are affected in varying degrees by the:

- * sun

Propagation cycles have a period of approximately 11:

- * years

What happens to signals higher in frequency than the critical frequency?

- * They pass through the ionosphere

What does maximum usable frequency mean?

- * The highest frequency signal that will reach its intended destination

In the northern hemisphere, in which direction should a directional antenna be pointed to take maximum advantage of auroral propagation?

- * North

If you receive a weak, distorted signal from a distance, and close to the maximum usable frequency, what type of propagation is probably occurring?

- * Scatter

What is a characteristic of HF scatter signals?

- * A wavering sound

What makes HF scatter signals often sound distorted?

- * Energy scattered into the skip zone through several radio-wave paths

Why are HF scatter signals usually weak?

- * Only a small part of the signal energy is scattered into the skip zone

How can cross-modulation be reduced?

- * By installing a suitable filter at the receiver

Stereo amplifiers often have long leads which pick up transmitted signals because they act as:

- * receiving antennas

If someone tells you that signals from your hand-held transceiver are interfering with other signals on a frequency near yours, what may be the cause?

- * Your hand-held may be transmitting spurious emissions

If your transmitter sends signals outside the band where it is transmitting, what is this called?

- * Spurious emissions

What is meant by harmonic radiation?

- * Unwanted signals at frequencies which are multiples of the fundamental (chosen) frequency

Why is harmonic radiation from an amateur station not wanted?

- * It may cause interference to other stations and may result in out-of-band signals

What type of filter might be connected to an amateur HF transmitter to cut down on harmonic radiation?

- * A [low pass filter](#)

Why do modern HF transmitters have a built-in low pass filter in their RF output circuits?

- * To reduce [harmonic radiation](#)

The ABC's

Part D

You may wonder how a series teaching the ABC's of the Basic question bank could have a Part D. Simply because these are not questions out of the question bank but it is support material to help you to deal with some of the questions, some math, and some logic.

Many of the Basic Question Bank questions can simply be answered by understanding some basics. There are four answers to select from for each question and often, using a bit of logic, you can select the correct answer by eliminating the answers which don't fit.

I.E.:

Series Resistance

The total resistance of a string of resistors will be larger than the largest resistor.

If you have two resistors of the same value the total series resistance will be twice that of each resistance, three resistors of the same value would be three times and so on.

Parallel Resistances

The total resistance will be smaller than the resistor with the lowest resistance value.

If you have two equal value resistors in parallel the total resistance would be one half that of each resistance value. Three resistors, total would be 1/3rd of each value.

Power in Resistance Calculations

When given two series resistors of the same resistance value and one is rated at one watt heat dissipation and the second is rated at 5 watts the circuit is limited in overall power dissipation by the smallest power rating resistor. If you go beyond that the smallest power value resistor will burn up. The total power this basic series resistance circuit can dissipate would be two watts, one watt for each resistor.

Capacitors

Capacitors are made up with two metal plates separated by a dielectric which could be any number of materials such as air plastic, glass, or even wax paper. If you double the area of the plates you double the capacitance. If you double the distance the plates are separated from each other capacitance is halved. By changing the dielectric material from one type to another the capacitance will be affected.

By connecting two capacitors of equal value in series it's like doubling the distance apart the plates are and so total circuit capacitance is one half of either capacitor

By connecting two capacitors of equal value in parallel it's as if you doubled the plate size of a capacitor so the new equivalent value of the circuit would be double the capacitance of one of the individual capacitors.

Capacitors tend to oppose changes in voltage.

Capacitance is measured in Farads, microfarads, nanofarads, picofarads.

Inductors

Inductors are made of conductors usually wound into coils, some are air core and some have iron or ferrite cores. Some even have non-ferrous slugs in the cores.

By connecting two equal value inductors in series it has the effect as if you took one of those inductors and doubled the turns of wire over its core and so the inductance of the circuit is doubled.

By connecting two equal value inductors in parallel the inductance of the combination is halved.

Inductors tend to oppose changes in current.

Inductance is measured in Henrys, milihenrys, microhenrys.

Please advise me if there are any failed links. Thanks!