

1A01 Who is an amateur operator as defined in Part 97?

-- A person named in an amateur operator/primary license grant in the FCC ULS database

1A02 What is one of the basic purposes of the Amateur Radio Service as defined in Part 97?

-- To provide a voluntary noncommercial communications service to the public, particularly in times of emergency

1A03 What classes of US amateur radio licenses may currently be earned by examination?

-- Technician, General, Extra

1A04 Who is a Volunteer Examiner?

-- An amateur accredited by one or more VECs who volunteers to administer amateur license exams

1A05 How long is a CSCE valid for license upgrade purposes?

-- 365 days

1A06 How many and what class of Volunteer Examiners are required to administer an Element 2 Technician written exam?

-- Three Examiners holding a General Class license or higher

1A07 Who makes and enforces the rules for the Amateur Radio Service in the United States?

-- The Federal Communications Commission

1A08 What are two of the five fundamental purposes for the Amateur Radio Service?

-- To increase the number of trained radio operators and electronics experts, and improve international goodwill

1A09 What is the definition of an amateur radio station?

-- A station in an Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications

1A10 What is a transmission called that disturbs other communications?

-- Harmful interference

1B01 What is the ITU?

-- The International Telecommunication Union

1B02 What is the purpose of ITU Regions?

-- They are used to assist in the management of frequency allocations

1B03 What system does the FCC use to select new amateur radio call signs?

-- Call signs are assigned in sequential order

1B04 What FCC call sign program might you use to obtain a call sign containing your initials?

-- The vanity call sign program

1B05 How might an amateur radio club obtain a club station call sign?

-- By applying through a Club Station Call Sign Administrator

1B06 Who is eligible to apply for temporary use of a 1-by-1 format Special Event call sign?

-- Any FCC-licensed amateur

1B07 When are you allowed to operate your amateur station in a foreign country?

-- When there is a reciprocal operating agreement between the countries

1B08 Which of the following call signs is a valid US amateur call?

-- KB3TMJ

1B09 What letters must be used for the first letter in US amateur call signs?

-- A, K, N and W

1B10 What numbers are used in US amateur call signs?

-- A single digit, 0 through 9

1C01 What is required before you can control an amateur station in the US?

-- You must be named in the FCC amateur license database, or be an alien with reciprocal operating authorization

1C02 Where does a US amateur license allow you to transmit?

-- From wherever the Amateur Radio Service is regulated by the FCC or where reciprocal agreements are in place

1C03 Under what conditions are amateur stations allowed to communicate with stations operating in other radio services?

-- When authorized by the FCC

1C04 Which frequency is within the 6-meter band?

-- 52.525 MHz

1C05 Which amateur band are you using when transmitting on 146.52 MHz?

-- 2 meter band

1C06 Which 70-centimeter frequency is authorized to a Technician class license holder operating in ITU Region 2?

-- 443.350 MHz

1C07 Which 23 centimeter frequency is authorized to a Technician class license holder operating in ITU Region 2?

-- 1296 MHz

1C08 What amateur band are you using if you are operating on 223.50 MHz?

-- 1.25 meter band

1C09 What do the FCC rules mean when an amateur frequency band is said to be available on a secondary basis?

-- Amateurs may not cause harmful interference to primary users

1C10 When may a US amateur operator communicate with an amateur in a foreign country?

-- At any time unless prohibited by either government

1C11 Which of the following types of communications are not permitted in the Amateur Radio Service?

-- Communications on a regular basis that could reasonably be furnished alternatively through other radio services

1D01 Which of the following services are issued an operator station license by the FCC?

-- Amateur Radio Service

1D02 Who can become an amateur licensee in the US?

-- Anyone except a representative of a foreign government

1D03 What is the minimum age required to hold an amateur license?

-- There is no minimum age requirement

1D04 What government agency grants your amateur radio license?

-- The Federal Communications Commission

1D05 How soon may you transmit after passing the required examination elements for your first amateur radio license?

-- As soon as your license grant appears in the FCC's ULS database

1D06 What is the normal term for an amateur station license grant?

-- 10 years

1D07 What is the grace period during which the FCC will renew an expired 10-year license without re-examination?

-- 2 years

1D08 What is your responsibility as a station licensee?

-- Your station must be operated in accordance with the FCC rules

1D09 When may the FCC revoke or suspend a license if the mailing address of the holder is not current with the FCC?

-- If mail is returned to the FCC as undeliverable

1D10 The FCC requires which address to be kept up to date on the Universal Licensing System database?

-- The station licensee mailing address

1D11 When are you permitted to continue to transmit if you forget to renew your amateur license and it expires?

-- Transmitting is not allowed until the license is renewed and appears on the FCC ULS database

1D12 Why must an Amateur radio operator have a correct name and mailing address on file with the FCC?

-- To receive mail delivery from the FCC by the United States Postal Service

2A01 When is an amateur station authorized to transmit information to the general public?

-- Never

2A02 When is an amateur station authorized to transmit music?

-- Amateurs may not transmit music, except as incidental to an authorized rebroadcast of space shuttle communications

2A03 When is the transmission of codes or ciphers allowed to hide the meaning of a message transmitted by an amateur station?

-- Only when transmitting control commands to space stations or radio control craft

2A04 When may an amateur station transmit false or deceptive signals?

-- Never

2A05 When may an amateur station transmit unidentified communications?

-- Only when sent from a space station or to control a model craft

2A06 What does the term broadcasting mean?

-- Transmissions intended for reception by the general public, either direct or relayed

2A07 Which of the following are specifically prohibited in the Amateur Radio Service?

-- Indecent and obscene language

2A08 Which of the following one-way communications may not be transmitted in the Amateur Radio Service?

-- Broadcasts intended for reception by the general public

2A09 When does the FCC allow an amateur radio station to be used as a method of communication for hire or material compensation?

-- Only when in accordance with part 97 rules

2A10 What type of communications are prohibited when using a repeater autopatch?

-- Calls to your employer requesting directions to a customer's office

2A11 When may you use your station to tell people about equipment you have for sale?

-- When you are offering amateur radio equipment for sale or trade on an occasional basis

2B01 What must you transmit to identify your amateur station?

-- Your call sign

2B02 What is a transmission called that does not contain a station identification?

-- Unidentified communications or signals

2B03 How often must an amateur station transmit the assigned call sign?

-- Every 10 minutes during communications and at the end of each communication

2B04 What is an acceptable method of transmitting a repeater station identification?

-- All of these answers are correct.

2B05 What identification is required when two amateur stations end communications?

-- Each station must transmit its own call sign

2B06 What is the longest period of time an amateur station can operate without transmitting its call sign?

-- 10 minutes

2B07 What is a permissible way to identify your station when you are speaking to another amateur operator using a language other than English?

-- You must identify using the English language

2B08 How often must you identify using your assigned call sign when operating while using a special event call sign?

-- Once per hour

2B09 What is required when using one or more self-assigned indicators with your assigned call sign?

-- The indicator must not conflict with an indicator specified by FCC rules or with a prefix assigned to another country

2B10 What is the correct way to identify when visiting a station if you hold a higher class license than that of the station licensee and you are using a frequency not authorized to his class of license?

-- Send his call sign first, followed by your call sign

2B11 When exercising the operating privileges earned by examination upgrade of a license what is meant by use of the indicator "/AG"?

-- Authorized General

2C01 What must every amateur station have when transmitting?

-- A control operator

2C02 (C ) How many amateur operator / primary station licenses may be held by one person?

-- Only one

2C03 What minimum class of amateur license must you hold to be a control operator of a repeater station?

-- Technician

2C04 Who is responsible for the transmissions from an amateur station?

-- Control operator

2C05 When must an amateur station have a control operator?

-- Whenever the station is transmitting

2C06 What is the control point of an amateur station?

-- The location at which the control operator function is performed

2C07 What type of amateur station does not require a control operator to be at the control point?

-- An automatically controlled station

2C08 What are the three types of station control permitted and recognized by FCC rule?

-- Local, remote and automatic control

2C09 What type of control is being used on a repeater when the control operator is not present?

-- Automatic control

2C10 What type of control is being used when transmitting using a handheld radio?

-- Local control

2C11 What type of control is used when the control operator is not at the station location but can still make changes to a transmitter?

-- Remote control

2C12 What is the definition of a control operator of an amateur station?

-- An operator designated by the licensee to be responsible for the station's transmissions to assure compliance with FCC rules

2D01 Who is responsible for proper operation if you transmit from another amateur's station?

-- Both of you

2D02 What operating privileges are allowed when another amateur holding a higher class license is controlling your station?

-- All privileges allowed by the higher class license

2D03 What operating privileges are allowed when you are the control operator at the station of another amateur who has a higher class license than yours?

-- Only the privileges allowed by your license

2D04 Which of the following is a prohibited amateur radio transmission?

-- Using amateur radio for conducting business

2D05 What is the definition of third-party communications?

-- A message sent between two amateur stations for someone else

2D06 How many persons are required to be members of a club for a club station license to be issued by the FCC?

-- At least 4

2D07 When may you operate your amateur station aboard an aircraft?

-- Only with the approval of the pilot in command and not using the aircraft's radio equipment

2D08 When is the FCC allowed to inspect your station equipment and station records?

-- At any time upon request

2D09 How might you best keep unauthorized persons from using your amateur station?

-- Disconnect the power and microphone cables when not using your equipment

2D10 Why are unlicensed persons in your family not allowed to transmit on your amateur station if you are not there?

-- They must be licensed before they are allowed to be control operators

2D11 When is it permissible for the control operator of a club station to accept compensation for sending information bulletins or Morse code practice?

-- When the station makes those transmissions for at least 40 hours per week

T3A01 Which of the following should you do when selecting a frequency on which to transmit?

-- Listen to determine if the frequency is busy

3A02 How do you call another station on a repeater if you know the station's call sign?

-- Say the station's call sign then identify your own station

3A03 How do you indicate you are looking for any station with which to make contact?

-- CQ followed by your callsign

3A04 What should you transmit when responding to a call of CQ?

-- The other station's callsign followed by your callsign

3A05 What term describes a brief test transmission that does not include any station identification?

-- An illegal unidentified transmission

3A06 What must an amateur do when making a transmission to test equipment or antennas?

-- Properly identify the station

3A07 Which of the following is true when making a test transmission?

-- Station identification is required at least every ten minutes and at the end of every transmission.

3A08 What is the meaning of the procedural signal "CQ"?

-- Calling any station

3A09 Why should you avoid using cute phrases or word combinations to identify your station?

-- They are not easily understood by some operators

3A10 What brief statement is often used in place of "CQ" to indicate that you are listening for calls on a repeater?

-- Say your call sign

3A11 Why should you use the International Telecommunication Union (ITU) phonetic alphabet when identifying your station?

-- The words are internationally recognized substitutes for letters

3B01 What is a band plan?

-- A voluntary guideline, beyond the divisions established by the FCC for using different operating modes within an amateur band

3B02 Which of the following statements is true of band plans?

-- They are voluntary guidelines for efficient use of the radio spectrum

3B03 Who developed the band plans used by amateur radio operators?

-- The amateur community

3B04 Who is in charge of the repeater frequency band plan in your local area?

-- The recognized frequency coordination body

3B05 What is the main purpose of repeater coordination?

-- To reduce interference and promote proper use of spectrum

3B06 Who is accountable if a repeater station inadvertently retransmits communications that violate FCC rules?

-- The transmitting station

3B07 Which of these statements is true about legal power levels on the amateur bands?

-- An amateur must use the minimum transmitter power necessary to carry out the desired communication

3B08 Which of the bands available to Technician class licensees have mode restricted sub-bands?

-- The 6-meter, 2-meter, and 1 1/4-meter bands

3B09 What emission modes are permitted in the restricted sub-band at

50.0-50.1 MHz?

-- CW only

3B10 What emission modes are permitted in the restricted sub-band at

144.0-144.1 MHz?

-- CW only

3C01 What is the proper way to break into a conversation between two stations that are using the frequency?

-- Say your call sign between their transmissions

3C02 What is considered to be proper repeater operating practice?

-- Monitor before transmitting and keep transmissions short

-- Identify legally

-- Use the minimum amount of transmitter power necessary

-- All of these answers are correct

3C03 What should you do before responding to another station's call?

-- Make sure you are operating on a permissible frequency for your license class

3C04 What rule applies if two amateur stations want to use the same frequency?

-- No frequency will be assigned for the exclusive use of any station and neither has priority

3C05 Why is indecent and obscene language prohibited in the Amateur Service?

-- All of these choices are correct

3C06 Why should amateur radio operators avoid the use of racial or ethnic slurs when talking to other stations?

-- It is offensive to some people and reflects a poor public image on all amateur radio operators

3C07 What should you do if you hear a newly licensed operator that is having trouble with their station?

-- Contact them and offer to help with the problem

3C08 Where can an official list be found of prohibited obscene and indecent words that should not be used in amateur radio?

-- There is no official list of prohibited obscene and indecent words

3C09 What type of subjects are not prohibited communications while using amateur radio?

-- Political discussions

-- Jokes and stories

-- Religious preferences

-- All of these answers are correct

3C10 When circumstances are not specifically covered by FCC rules, what general operating standard must be applied to amateur station operation?

-- Good engineering and amateur practices

3D01 What should you do if you receive a report that your transmissions are causing splatter or interference on nearby frequencies?

-- Check transmitter for off frequency operation or spurious emissions

3D02 Who is responsible for taking care of the interference if signals from your transmitter are causing front end overload in your neighbor's television receiver?

-- The owner of the television receiver is responsible

3D03 What is the major cause of telephone interference?

-- The telephone was not equipped with adequate interference protection when manufactured.

3D04 What is the proper course of action if you unintentionally interfere with another station?

-- Properly identify your station and move to a different frequency

3D05 When may you deliberately interfere with another station's communications?

-- Never

3D06 Who has exclusive use of a specific frequency when the FCC has not declared a communication emergency?

-- No station has exclusive use of any frequency

3D07 What effect might a break in a cable television transmission line have on amateur communications?

-- TV interference may result when the amateur station is transmitting, or interference may occur to the amateur receiver

3D08 What is the best way to reduce on the air interference when testing your transmitter?

-- Use a dummy load when testing

3D09 What rules apply to your station when using amateur radio at the request of public service officials or at the scene of an emergency?

-- FCC

3D10 What do RACES and ARES have in common?

-- Both organizations provide communications during emergencies

3D11 What is meant by receiver front-end overload?

-- Interference caused by strong signals from a nearby source

4A01 Electrical current is measured in which of the following units?

-- Amperes

4A02 Electrical Power is measured in which of the following units?

-- Watts

4A03 What is the name for the flow of electrons in an electric circuit?

-- Current

4A04 What is the name of a current that flows only in one direction?

-- A direct current

4A05 What is the standard unit of frequency?

-- The Hertz

4A06 How much voltage does an automobile battery usually supply?

-- About 12 volts

4A07 What is the basic unit of resistance?

-- The ohm

4A08 What is the name of a current that reverses direction on a regular basis?

-- An alternating current

4A09 Which of the following is a good electrical conductor?

-- Copper

4A10 Which of the following is a good electrical insulator?

-- Glass

4A11 What is the term used to describe opposition to current flow in ordinary conductors such as wires?

-- Resistance

4A12 What instrument is used to measure the flow of current in an electrical circuit?

-- Ammeter

4A13 What instrument is used to measure Electromotive Force (EMF) between two points such as the poles of a battery?

-- Voltmeter

4B01 What is the name for the distance a radio wave travels during one complete cycle?

-- Wavelength

4B02 (D) What term describes the number of times that an alternating current flows back and forth per second?

-- Frequency

4B03 What does 60 hertz (Hz) mean?

-- 60 cycles per second

4B04 Electromagnetic waves that oscillate more than 20,000 times per second as they travel through space are generally referred to as what?

-- Radio waves

4B05 How fast does a radio wave travel through space?

-- At the speed of light

4B06 How does the wavelength of a radio wave relate to its frequency?

-- The wavelength gets shorter as the frequency increases

4B07 What is the formula for converting frequency to wavelength in meters?

-- Wavelength in meters equals 300 divided by frequency in megahertz

4B08 What are sound waves in the range between 300 and 3000 Hertz called?

-- Voice frequencies

4B09 What property of a radio wave is often used to identify the different bands amateur radio operators use?

-- The physical length of the wave

4B10 What is the frequency range of the 2 meter band in the United States?

-- 144 to 148 MHz

4B11 What is the frequency range of the 6 meter band in the United States?

-- 50 to 54 MHz

4B12 What is the frequency range of the 70 centimeter band in the United States?

-- 420 to 450 MHz

4C01 What is used to convert radio signals into sounds we can hear?

-- Receiver

4C02 What is used to convert sounds from our voice into radio signals?

-- Transmitter

4C03 What two devices are combined into one unit in a transceiver?

-- Receiver, transmitter

4C04 What device is used to convert the alternating current from a wall outlet into low-voltage direct current?

-- Power Supply

4C05 What device is used to increase the output of a 10 watt radio to 100 watts?

-- Amplifier

4C06 Which of the battery types listed below offers the longest life when used with a hand-held radio, assuming each battery is the same physical size?

-- Lithium-ion

4C07 What is the nominal voltage per cell of a fully charged nickel-cadmium battery?

-- 1.2 volts

4C08 What battery type on this list is not designed to be re-charged?

-- Carbon-zinc

4C09 What is required to keep rechargeable batteries in good condition and ready for emergencies?

-- They must be inspected for physical damage and replaced if necessary

-- They should be stored in a cool and dry location

-- They must be given a maintenance recharge at least every 6 months

-- All of these answers are correct

4C10 What is the best way to get the most amount of energy from a battery?

-- Draw current from the battery at the slowest rate needed

4D01 What formula is used to calculate current in a circuit?

-- Current (I) equals voltage (E) divided by resistance (R)

4D02 What formula is used to calculate voltage in a circuit?

-- Voltage (E) equals current (I) multiplied by resistance (R)

4D03 What formula is used to calculate resistance in a circuit?

-- Resistance (R) equals voltage (E) divided by current (I)

4D04 What is the resistance of a circuit when a current of 3 amperes flows through a resistor connected to 90 volts?

-- 30 ohms

4D05 What is the resistance in a circuit where the applied voltage is 12 volts and the current flow is 1.5 amperes?

-- 8 ohms

4D06 What is the current flow in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?

-- 1.5 amperes

4D07 What is the voltage across the resistor if a current of 0.5 amperes flows through a 2 ohm resistor?

-- 1 volt

4D08 What is the voltage across the resistor if a current of 1 ampere flows through a 10 ohm resistor?

-- 10 volts

4D09 What is the voltage across the resistor if a current of 2 amperes flows through a 10 ohm resistor?

-- 20 volts

4D10 What is the current flowing through a 100 ohm resistor connected across 200 volts?

-- 2 amperes

4D11 What is the current flowing through a 24 ohm resistor connected across 240 volts?

-- 10 amperes

4E01 What unit is used to describe electrical power?

-- Watt

4E02 What is the formula used to calculate electrical power in a DC circuit?

-- Power (P) equals voltage (E) multiplied by current (I)

4E03 How much power is represented by a voltage of 13.8 volts DC and a current of 10 amperes?

-- 138 watts

4E04 How much power is being used in a circuit when the voltage is 120 volts DC and the current is 2.5 amperes?

-- 300 watts

4E05 How can you determine how many watts are being drawn by your transceiver when you are transmitting?

-- Measure the DC voltage at the transceiver and multiply by the current drawn when you transmit

4E06 How many amperes are flowing in a circuit when the applied voltage is 120 volts DC and the load is 1200 watts?

-- 10 amperes

4E07 How many milliamperes is the same as 1.5 amperes?

-- 1500 milliamperes

4E08 What is another way to specify the frequency of a radio signal that is oscillating at 1,500,000 Hertz?

-- 1500 kHz

4E09 How many volts are equal to one kilovolt?

-- one thousand volts

4E10 How many volts are equal to one microvolt?

-- one one-millionth of a volt

4E11 How many watts does a hand-held transceiver put out if the output power is 500 milliwatts?

-- 0.5 watts

5A01 What does a microphone connect to in a basic amateur radio station?

-- The transmitter

5A02 Which piece of station equipment converts electrical signals to sound waves?

-- Speaker

5A03 What is the term used to describe what happens when a microphone and speaker are too close to each other?

-- Audio feedback

5A04 What could you use in place of a regular speaker to help you copy signals in a noisy area?

-- A set of headphones

5A05 What is a good reason for using a regulated power supply for communications equipment?

-- To protect equipment from voltage fluctuations

5A06 Where must a filter be installed to reduce spurious emissions?

-- At the transmitter

5A07 What type of filter should be connected to a TV receiver as the first step in trying to prevent RF overload from a nearby 2-meter transmitter?

-- Notch filter

5A08 What is connected between the transceiver and computer terminal in a packet radio station?

-- Terminal Node Controller

5A09 Which of these items is not required for a packet radio station?

-- Microphone

5A10 What can be used to connect a radio with a computer for data transmission?

-- Sound Card

5B01 What may happen if a transmitter is operated with the microphone gain set too high?

-- It may cause the signal to become distorted and unreadable

5B02 What kind of information may a VHF/UHF transceiver be capable of storing in memory?

-- All of these answers are correct

5B03 What is one way to select a frequency on which to operate?

-- Use the keypad or VFO knob to enter the correct frequency

5B04 What is the purpose of the squelch control on a transceiver?

-- It is used to quiet noise when no signal is being received

5B05 What is a way to enable quick access to a favorite frequency on your transceiver?

-- Store the frequency in a memory channel

5B06 What might you do to improve the situation if the station you are listening to is hard to copy because of ignition noise interference?

-- Turn on the noise blanker

5B07 What is the purpose of the buttons labeled "up" and "down" on many microphones?

-- To allow easy frequency or memory selection

5B08 What is the purpose of the "shift" control found on many VHF/UHF transceivers?

-- Adjust the offset between transmit and receive frequency

5B09 What does RIT mean?

-- Receiver Incremental Tuning

5B10 What is the purpose of the "step" menu function found on many transceivers?

-- It sets the tuning rate when changing frequencies

5B11 What is the purpose of the "function" or "F" key found on many transceivers?

-- It selects an alternate action for some control buttons

5C01 What is one purpose of a repeater?

-- To transmit signals for observing propagation and reception

5C02 What is a courtesy tone?

-- A tone used to indicate when a transmission is complete

5C03 Which of the following is the most important information to know before using a repeater?

-- The repeater input and output frequencies

5C04 Why should you pause briefly between transmissions when using a repeater?

-- To listen for anyone wanting to break in

5C05 What is the most common input/output frequency offset for repeaters in the 2-meter band?

-- 0.6 MHz

5C06 What is the most common input/output frequency offset for repeaters in the 70-centimeter band?

-- 5.0 MHz

5C07 What is meant by the terms input and output frequency when referring to repeater operations?

-- The repeater receives on one frequency and transmits on another

5C08 What is the meaning of the term simplex operation?

-- Transmitting and receiving on the same frequency

5C09 What is a reason to use simplex instead of a repeater?

-- To avoid tying up the repeater when direct contact is possible

5C10 How might you find out if you could communicate with a station using simplex instead of a repeater?

-- Check the repeater input frequency to see if you can hear the other station

5C11 What is the term for a series of repeaters that can be connected to one another to provide users with a wider coverage?

-- Linked repeater system

5C12 What is the main reason repeaters should be approved by the local frequency coordinator before being installed?

-- Coordination minimizes interference between repeaters and makes the most efficient use of available frequencies

5C13 Which of the following statements regarding use of repeaters is true?

-- Access to any repeater may be limited by the repeater owner

5C14 What term is used to describe a repeater when use is restricted to the members of a club or group?

-- A closed repeater

5D01 What is meant by fundamental overload in reference to a receiver?

-- Interference caused by very strong signals from a nearby source

5D02 Which of the following is NOT a cause of radio frequency interference?

-- Doppler shift

5D03 What is the most likely cause of telephone interference from a nearby transmitter?

-- The transmitter's signals are causing the telephone to act like a radio receiver

5D04 What is a logical first step when attempting to cure a radio frequency interference problem in a nearby telephone?

-- Install an RF filter at the telephone

5D05 What should you do first if someone tells you that your transmissions are interfering with their TV reception?

-- Make sure that your station is operating properly and that it does not cause interference to your own television

5D07 Which of the following may be useful in correcting a radio frequency interference problem?

-- All of these answers are correct

5D08 What is the proper course of action to take when a neighbor reports that your radio signals are interfering with something in his home?

-- Check your station and make sure it meets the standards of good amateur practice

5D09 What should you do if a "Part 15" device in your neighbor's home is causing harmful interference to your amateur station?

-- All of these answers are correct

5D10 What could be happening if another operator tells you he is hearing a variable high-pitched whine on the signals from your mobile transmitter?

-- The power wiring for your radio is picking up noise from the vehicle's electrical system

5D11 What may be the problem if another operator reports that your SSB signal is very garbled and breaks up?

-- RF energy may be getting into the microphone circuit and causing feedback

5D12 What might be the problem if you receive a report that your signal through the repeater is distorted or weak?

-- All of these answers are correct

5D13 What is one of the reasons to use digital signals instead of analog signals to communicate with another station?

-- Many digital systems can automatically correct errors caused by noise and interference

6A01 What are phone transmissions?

-- Voice transmissions by radio

6A02 Which of the following is a form of amplitude modulation?

-- Single sideband

6A03 What name is given to an amateur radio station that is used to connect other amateur stations to the Internet?

-- A gateway

6A04 Which type of voice modulation is most often used for long distance and weak signal contacts on the VHF and UHF bands?

-- SSB

6A05 Which type of modulation is most commonly used for VHF and UHF voice repeaters?

-- FM

6A06 Which emission type has the narrowest bandwidth?

-- CW

6A07 Which sideband is normally used for VHF and UHF SSB communications?

-- Upper sideband

6A08 What is the primary advantage of single sideband over FM for voice transmissions?

-- SSB signals use much less bandwidth than FM signals

6A09 What is the approximate bandwidth of a single-sideband voice signal?

-- Between 2 and 3 kHz

6A10 What is the approximate bandwidth of a frequency-modulated voice signal?

-- Between 5 and 15 kHz

6A11 What is the normal bandwidth required for a conventional fast-scan TV transmission using combined video and audio on the 70-centimeter band?

-- About 6 MHz

6B01 How is information transmitted between stations using Echolink?

-- Internet

6B02 What does the abbreviation IRLP mean?

-- Internet Radio Linking Project

6B03 Who may operate on the Echolink system?

-- Any licensed amateur radio operator

6B04 What technology do Echolink and IRLP have in common?

-- Voice over Internet protocol

6B05 What method is used to transfer data by IRLP?

-- Voice over Internet protocol

6B06 What does the term IRLP describe?

-- A method of linking between two or more amateur stations using the Internet

6B07 Which one of the following allows computer-to-radio linking for voice transmission?

-- EchoLink

6B08 What are you listening to if you hear a brief tone and then a station from Russia calling CQ on a 2-meter repeater?

-- An Internet linked DX station

6B10 Where might you find a list of active nodes using VoIP?

-- A repeater directory or the Internet

6B11 When using a portable transceiver how do you select a specific IRLP node?

-- Use the keypad to transmit the IRLP node numbers

6C01 Which of the following is an example of a digital communications method?

-- Packet radio

6C02 What does the term APRS mean?

-- Automatic Position Reporting System

6C03 What item is required along with your normal radio for sending automatic location reports?

-- A global positioning system receiver

6C04 What type of transmission is indicated by the term NTSC?

-- A standard fast scan color television signal

6C05 What emission mode may be used by a Technician class operator in the 219 - 220 MHz frequency range?

-- Point-to-point digital message forwarding

6C06 What does the abbreviation PSK mean?

-- Phase Shift Keying

6C07 What is PSK31?

-- A low-rate data transmission mode that works well in noisy conditions

6C08 What sending speed is recommended when using Morse code?

-- Any speed at which you can reliably receive

6C09 What is a practical reason for being able to copy CW when using repeaters?

-- To recognize a repeater ID sent in Morse code

6C10 What is the "Q" signal used to indicate that you are receiving interference from other stations?

-- QRM

6C11 What is the "Q" signal used to indicate that you are changing frequency?

-- QSY

7A01 What is a good thing to have when operating a hand-held transceiver away from home?

-- One or more fully charged spare battery packs

7A02 Which of these items would probably not be very useful to include in an emergency response kit?

-- A 1500 watt output linear amplifier

7A03 How can you make the signal from a hand-held radio stronger when operating in the field?

-- Use an external antenna instead of the rubber-duck antenna

7A04 What would be a good thing to have when operating from a location that includes lots of crowd noise?

-- A combination headset and microphone

7A05 What is a method used to locate sources of noise interference or jamming?

-- Radio direction finding

7A06 Which of these items would be the most useful for a hidden transmitter hunt?

-- A directional antenna

7A07 What is a popular operating activity that involves contacting as many stations as possible during a specified period of time?

-- Contesting

7A09 What is a grid locator?

-- A letter-number designator assigned to a geographic location

7A10 What is a special event station?

-- A temporary station that operates in conjunction with an activity of special significance

7A11 What is the maximum power allowed when transmitting telecommand signals to radio controlled models?

-- 1 watt

7A12 What is the station identification requirement when sending commands to a radio control model using amateur frequencies?

-- A label indicating the licensee's call sign and address must be affixed to the transmitter

7B01 What class of license is required to use amateur satellites?

-- Any amateur whose license allows them to transmit on the satellite uplink frequency

7B02 How much power should you use to transmit when using an amateur satellite?

-- The minimum amount of power needed to complete the contact

7B03 What is something you can do when using an amateur radio satellite?

-- Talk to amateur radio operators in other countries

7B04 Who may make contact with an astronaut on the International Space Station using amateur radio frequencies?

-- Any amateur with a Technician or higher class license

7B05 What is a satellite beacon?

-- A signal that contains information about a satellite

7B06 What should you use to determine when you can access an amateur satellite?

-- A satellite tracking program

7B07 What is Doppler shift?

-- A change in signal frequency caused by motion through space

7B08 What is the name of the group that coordinates the building and/or launch of the largest number of amateur radio satellites?

-- AMSAT

7B09 What is a satellite sub-band?

-- A portion of a band where satellite operations are permitted

7B10 What is the satellite sub-band on 70-CM?

-- 435 to 438 MHz

7B11 What do the initials LEO tell you about an amateur satellite?

-- The satellite is in a Low Earth Orbit

8A01 What information is included in an FCC declaration of a temporary state of communication emergency?

-- Any special conditions and rules to be observed during the emergency

8A02 Under what conditions are amateur stations allowed to communicate with stations operating in other radio services?

-- When specially authorized by the FCC, or in an actual emergency

8A03 What should you do if you are in contact with another station and an emergency call is heard?

-- Stop your contact immediately and take the emergency call

8A04 What are the restrictions on amateur radio communications after the FCC has declared a communications emergency?

-- You must avoid those frequencies dedicated to supporting the emergency unless you are participating in the relief effort

8A05 What is one reason for using tactical call signs such as "command post" or "weather center" during an emergency?

-- They are more efficient and help coordinate public-service communications

8A06 What is legally required to restrict a frequency to emergency-only communication?

-- An FCC declaration of a communications emergency

8A07 Who has the exclusive use of a frequency if the FCC has not declared a communication emergency?

-- No station has exclusive use in this circumstance

8A08 What should you do if you hear someone reporting an emergency?

-- Assume the emergency is real and act accordingly

8A09 What is an appropriate way to initiate an emergency call on amateur radio?

-- Say "Mayday, Mayday, Mayday" followed by "any station come in please" and identify your station

8A10 What are the penalties for making a false emergency call?

-- All of these answers are correct

8A11 What type of communications has priority at all times in the Amateur Radio Service?

-- Emergency communications

8A12 When must priority be given to stations providing emergency communications?

-- At all times and on all frequencies

8B01 What can you do to be prepared for an emergency situation where your assistance might be needed?

-- All of these answers are correct

8B02 When may you use your amateur station to transmit a "SOS" or "MAYDAY" signal?

-- When there is immediate threat to human life or property

8B03 What is the primary function of RACES in relation to emergency activities?

-- RACES organizations are restricted to serving local, state, and federal government emergency management agencies

8B04 What is the primary function of ARES in relation to emergency activities?

-- ARES supports agencies like the Red Cross, Salvation Army, and National Weather Service

8B05 What organization must you register with before you can participate in RACES activities?

-- The responsible civil defense organization

8B06 What is necessary before you can join an ARES group?

-- You must have an amateur radio license

8B07 What could be used as an alternate source of power to operate radio equipment during emergencies?

-- The battery in a car or truck  
-- A bicycle generator  
-- A portable solar panel  
-- All of these answers are correct

8B08 When can you use non-amateur frequencies or equipment to call for help in a situation involving immediate danger to life or property?

-- In a genuine emergency you may use any means at your disposal to call for help on any frequency

8B09 Why should casual conversation between stations during a public service event be avoided?

-- Idle chatter may interfere with important traffic

8B10 What should you do if a reporter asks to use your amateur radio transceiver to make a news report?

-- Advise them that the FCC prohibits such use

8B11 When can you use a modified amateur radio transceiver to transmit on the local fire department frequency?

-- In a genuine emergency you may use any means at your disposal to call for help on any frequency

8C01 Which type of traffic has the highest priority?

-- Emergency traffic

8C02 What type of messages should not be transmitted over amateur radio frequencies during emergencies?

-- Personal information concerning victims

8C03 What should you do to minimize disruptions to an emergency traffic net once you have checked in?

-- Do not transmit on the net frequency until asked to do so by the net control station

8C04 What is one thing that must be included when passing emergency messages?

-- The name of the person originating the message

8C05 What is one way to reduce the chances of casual listeners overhearing sensitive emergency traffic?

-- Pass messages using a non-voice mode such as packet radio or Morse code

8C06 What is of primary importance for a net control station?

-- A strong and clear signal

8C07 What should the net control station do if someone breaks in with emergency traffic?

-- Stop all net activity until the emergency has been handled

8C08 What should you do if a large scale emergency has just occurred and no net control station is available?

-- Open the emergency net immediately and ask for check-ins

8C09 What is the preamble of a message?

-- The information needed to track the message as it passes through the amateur radio traffic handling system

8C10 What is meant by the term "check" in reference to a message?

-- The check is a count of the number of words in the message

8C11 What is the recommended guideline for the maximum number of words to be included in the text of an emergency message?

-- 25 words

9A01 What is a beam antenna?

-- An antenna that concentrates signals in one direction

9A02 What is an antenna that consists of a single element mounted perpendicular to the Earth's surface?

-- A vertical antenna

9A03 What type of antenna is a simple dipole mounted so the elements are parallel to the Earth's surface?

-- A horizontal antenna

9A04 What is a disadvantage of the "rubber duck" antenna supplied with most hand held radio transceivers?

-- It does not transmit or receive as effectively as a full sized antenna

9A05 How does the physical size of half-wave dipole antenna change with operating frequency?

-- It becomes shorter as the frequency increases

9A06 What is the advantage of 5/8 wavelength over 1/4 wavelength vertical antennas?

-- Their radiation pattern concentrates energy at lower angles

9A07 What is the primary purpose of a dummy load?

-- It does not radiate interfering signals when making tests

9A08 What type of antennas are the quad, Yagi, and dish?

-- Directional or beam antennas

9A09 What is one type of antenna that offers good efficiency when operating mobile and can be easily installed or removed?

-- A magnet mount vertical antenna

9A10 What is a good reason not to use a "rubber duck" antenna inside your car?

-- Signals can be 10 to 20 times weaker than when you are outside of the vehicle

9A11 What is the approximate length, in inches, of a quarter-wavelength vertical antenna for 146 MHz?

-- 19 inches

9A12 What is the approximate length, in inches, of a 6-meter 1/2 wavelength wire dipole antenna?

-- 112 inches

9B01 Why are VHF/UHF signals not normally heard over long distances?

-- VHF and UHF signals are usually not reflected by the ionosphere

9B02 What might be happening when we hear a VHF signal from long distances?

-- A possible cause is sporadic E reflection from a layer in the ionosphere

9B03 What is the most likely cause of sudden bursts of tones or fragments of different conversations that interfere with VHF or UHF signals?

-- Strong signals are overloading the receiver and causing undesired signals to be heard

9B04 What is the radio horizon?

-- The point where radio signals between two points are blocked by the curvature of the Earth

9B05 What should you do if a station reports that your signals were strong just a moment ago, but now they are weak or distorted?

-- Try moving a few feet, random reflections may be causing multi-path distortion.

9B06 Why do UHF signals often work better inside of buildings than VHF signals?

-- The shorter wavelength of UHF signals allows them to more easily penetrate urban areas and buildings

9B07 What is a good thing to remember when using your hand-held VHF or UHF radio to reach a distant repeater?

-- Keep the antenna as close to vertical as you can

9B08 What can happen if the antennas at opposite ends of a VHF or UHF line of sight radio link are not using the same polarization?

-- Signals could be as much as 100 times weaker

9B09 What might be a way to reach a distant repeater if buildings or obstructions are blocking the direct line of sight path?

-- Try using a directional antenna to find a path that reflects signals to the repeater

9B10 What term is commonly used to describe the rapid fluttering sound sometimes heard from mobile stations that are moving while transmitting?

-- Picket fencing

9B11 (C) Why do VHF and UHF Radio signals usually travel about a third farther than the visual line of sight distance between 2 stations?

-- The Earth seems less curved to radio waves than to light

9C01 What, in general terms, is standing wave ratio (SWR) ?

-- A measure of how well a load is matched to a transmitter

9C02 What reading on a SWR meter indicates a perfect impedance match between the antenna and the feed line?

-- 1 to 1

9C03 What might be indicated by erratic changes in SWR readings?

-- A loose connection in your antenna or feedline

9C04 What is the SWR value where the protection circuits in most solid-state transmitters begin to reduce transmitter power?

-- 2 to 1

9C05 What happens to the power lost in a feed line?

-- It is converted into heat by losses in the line

9C06 What instrument other than a SWR meter could you use to determine if your feedline and antenna are properly matched?

-- Directional wattmeter

9C07 What is the most common reason for failure of coaxial cables?

-- Moisture contamination

9C08 Why is it important to have a low SWR in an antenna system that uses coaxial cable feedline?

-- To allow the efficient transfer of power and reduce losses

9C09 What can happen to older coaxial cables that are exposed to weather and sunlight for several years?

-- Losses can increase dramatically

9C10 Why is the outer sheath of most coaxial cables black in color?

-- Black provides protection against ultraviolet damage

9C11 What is the impedance of the most commonly used coaxial cable in typical amateur radio installations?

-- 50 Ohms

9C12 Why is coaxial cable used more often than any other feed line for amateur radio antenna systems?

-- It is easy to use and requires few special installation considerations

0A01 What is a commonly accepted value for the lowest voltage that can cause a dangerous electric shock?

-- 30 volts

0A02 What is the lowest amount of electrical current flowing through the human body that is likely to cause death?

-- 100 milliamperes

0A03 What is connected to the green wire in a three-wire electrical plug?

-- Ground

0A04 What is the purpose of a fuse in an electrical circuit?

-- To interrupt power in case of overload

0A05 What might happen if you install a 20-ampere fuse in your transceiver in the place of a 5-ampere fuse?

-- Excessive current could cause a fire

0A06 What is a good way to guard against electrical shock at your station?

-- All of these answers are correct

0A07 What is the most important thing to consider when installing an emergency disconnect switch at your station?

-- Everyone should know where it is and how to use it

0A08 What precautions should be taken when a lightning storm is expected?

-- All of these answers are correct

0A09 What is one way to recharge a 12-volt battery if the commercial power is out?

-- Connect the battery to a car's battery and run the engine

0A10 What kind of hazard is presented by a conventional 12-volt storage battery?

-- All of these answers are correct

0A11 What can happen if a storage battery is charged or discharged too quickly?  
-- The battery could overheat and give off dangerous gas or explode

0A12 What is the most important reason to have a lightning protection system for your amateur radio station?  
-- Fire prevention

0A13 What kind of hazard might exist in a power supply when it is turned off and disconnected?  
-- You might receive an electric shock from stored charge in large capacitors

0B01 Why should you wear a hard hat and safety glasses if you are on the ground helping someone work on an antenna tower?  
-- To protect your head and eyes in case something accidentally falls from the tower

0B02 What is a good precaution to observe before climbing an antenna tower?  
-- Put on your safety belt and safety glasses

0B03 What should you do before you climb a tower?  
-- Arrange for a helper or observer  
-- Inspect the tower for damage or loose hardware  
-- Make sure there are no electrical storms nearby  
-- All of these answers are correct

0B04 What is an important consideration when putting up an antenna?  
-- Make sure people cannot accidentally come into contact with it

0B05 What must be considered when erecting an antenna near an airport?  
-- The maximum allowed height with regard to nearby airports

0B06 What is the most important safety precaution to observe when putting up an antenna tower?  
-- Look for and stay clear of any overhead electrical wires

0B07 How should the guy wires for an antenna tower be installed?  
-- In accordance with the tower manufacturer's instructions

0B08 What is a safe distance from a power line to allow when installing an antenna?  
-- So that if the antenna falls unexpectedly, no part of it can come closer than 10 feet to the power wires

0B09 What is the most important safety rule to remember when using a crank-up tower?  
-- A crank-up tower should never be climbed unless it is in the fully lowered position

0B10 Why is stainless steel hardware used on many antennas instead of other metals?  
-- Stainless steel parts are much less likely to corrode

0B11 What is considered to be an adequate ground for a tower?  
-- Separate 8 foot long ground rods for each tower leg, bonded to the tower and each other

0C01 What type of radiation are VHF and UHF radio signals?  
-- Non-ionizing radiation

0C02 When can radio waves cause injury to the human body?  
-- Only if the combination of signal strength and frequency cause excessive power to be absorbed

0C03 What is the maximum power level that an amateur radio station may use at frequencies above 30 MHz before an RF exposure evaluation is required?

-- 50 watts PEP at the antenna

0C04 What factors affect the RF exposure of people near an amateur transmitter?

- Frequency and power level of the RF field
- Distance from the antenna to a person
- Radiation pattern of the antenna
- All of these answers are correct

0C05 Why must the frequency of an RF source be considered when evaluating RF radiation exposure?

-- The human body absorbs more RF energy at some frequencies than others

0C06 How can you determine that your station complies with FCC RF exposure regulations?

- By calculation based on FCC OET Bulletin 65
- By calculation based on computer modeling
- By measurement of field strength using calibrated equipment
- All of these choices are correct

0C07 What could happen if a person accidentally touched your antenna while you were transmitting?

-- They might receive a painful RF burn injury

0C08 What action might amateur operators take to prevent exposure to RF radiation in excess of FCC supplied limits?

-- All of these answers are correct

0C09 How can you make sure your station stays in compliance with RF safety regulations?

-- By re-evaluating the station whenever an item of equipment is changed

0C10 Which of the following units of measurement is used to measure RF radiation exposure?

-- Milliwatts per square centimeter

0C11 Why is duty cycle one of the factors used to determine safe RF radiation exposure levels?

-- It takes into account the amount of time the transmitter is operating