Industry Canada Industrie Canada

Spectrum Management and Telecommunications **18 June, 2017**

Basic Qualification Question Bank for Amateur Radio Operator Certificate Examinations

Foreword:
This question bank contains the questions that will be used effective the date printed on the title page, for making Basic Qualification examinations for the Amateur Radio Operator Certificate.
The correct choice of the four suggested answers appears in brackets following each question identifier. i.e. B-001-001-001 (A)

While every reasonable effort has been made to ensure accuracy in this document, no warranty is expressed or implied.

Candidates for amateur radio operator certificate examinations are encouraged to contact the following amateur radio organizations for information on study material.

Radio Amateurs of Canada
720 Belfast Road, Suite 217
Ottawa, Ontario
K1G 0Z5
www.rac.ca

Radio Amateur du Québec inc.
4545 Pierre-de-Coubertin Avenue
C.P. 1000, Succursale M
Montréal, Quebec
H1V 3R2
www.raqi.qc.ca

Instructions for examiners are contained in Radiocommunication Information Circular RIC-1, Guide for Examiners Accredited to Conduct Examinations for the Amateur Radio Operator Certificate.

For additional information, please contact the Amateur Radio Service Centre:

Industry Canada
Amateur Radio Service Centre
2 Queen Street East
Sault Ste. Marie, ON
P6A 1Y3

E-mail address: spectrum.amateur@ic.gc.ca
Telephone: 1-888-780-3333 (Toll free)
Fax number: 1-705-941-4607

B-001-001-001

Authority to make regulations governing radiocommunications is derived from:

A the Radiocommunication Regulations
B the Standards for the Operation of Radio Stations in the Amateur Radio Service
C the ITU Radio Regulations
D the Radiocommunication Act

B-001-001-002

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

A the Standards for the Operation of Radio Stations in the Amateur Radio Service
B the ITU Radio Regulations
C the Radiocommunication Act
D the Radiocommunication Regulations

B-001-001-003

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

A Industry Canada
B Transport Canada
C Communications Canada
D National Defence

B-001-001-004

The "amateur radio service" is defined in:

A the Standards for the Operation of Radio Stations in the Amateur Radio Service
B the FCC's Part 97 rules
C the Radiocommunication Regulations
D the Radiocommunication Act

B-001-002-001

What must you do to notify your mailing address changes?

A Contact Industry Canada and provide details of your address change
B Telephone your local club, and give them your new address
C Contact an accredited examiner and provide details of your address change
D Write amateur organizations advising them of your new address, enclosing your certificate

B-001-002-002

An Amateur Radio Operator Certificate is valid for:

A one year
B life
C five years
D three years

B-001-002-003

Whenever a change of address is made:

A Industry Canada must be advised of any change in postal address
B Industry Canada must be notified within 14 days of operation at the new address
C the station shall not be operated until a change of address card is forwarded to Industry Canada
D within the same province, there is no need to notify Industry Canada

B-001-002-004

The Amateur Radio Operator Certificate:

A must be retained at the station
B must be put on file
C must be kept in a safe place
D must be kept on the person to whom it is issued

B-001-002-005

The holder of an Amateur Radio Operator Certificate shall, at the request of a duly appointed radio inspector, produce the certificate, or a copy thereof, to the inspector, within ____ hours after the request:

A 24
B 72
C 48
D 12

B-001-002-006

The fee for an Amateur Radio Operator Certificate is:

A $10
B $24
C free
D $32

B-001-002-007

The Amateur Radio Operator Certificate should be:

A retained in the radio amateur's vehicle
B retained at the address provided to Industry Canada
C retained in a safety deposit box
D retained on the radio amateur's person

B-001-003-001

Out of amateur band transmissions:

A must be identified with your call sign
B are permitted
C are permitted for short tests only
D are prohibited - penalties could be assessed to the control operator

B-001-003-002

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

A An emergency test transmission
B Nothing special: "MAYDAY" has no meaning in an emergency
C False or deceptive signals
D A traditional greeting in May

B-001-003-003

A person found guilty of transmitting a false or fraudulent distress signal, or interfering with, or obstructing any radio communication, without lawful cause, may be liable, on summary conviction, to a penalty of:

A a fine of $10 000
B a prison term of two years
C a fine of $1 000
D a fine, not exceeding $5 000, or a prison term of one year, or both

B-001-003-004

What government document states the offences and penalties for non compliance of the rules governing radiocommunications?

A The Official Radio Rules of Canada
B The Radiocommunications Regulations
C The Radiocommunications Law Reform Act of 2002
D The Radiocommunication Act

B-001-003-005

Which of the following is not correct? The Minister may suspend an Amateur Radio Operator Certificate:

A. Where the holder has failed to comply with a request to pay fees or interest due
B. With no notice, or opportunity to make representation thereto
C. Where the holder has contravened the Radiocommunication Act, its Regulations, or the terms and conditions of the certificate
D. Where the certificate was obtained through misrepresentation

B-001-003-006

Which of the following statements is not correct?

A. In executing a warrant, a radio inspector shall not use force, unless accompanied by a peace officer, and force is authorized
B. The person in charge of a place entered by a radio inspector shall give the inspector information that the inspector requests
C. A radio inspector may enter a dwelling without the consent of the occupant and without a warrant
D. Where entry is refused, and is necessary to perform his duties under the Act, a radio inspector may obtain a warrant

B-001-004-001

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

A There are no age limits
B 70 years or younger
C 18 years or older
D 14 years or older

B-001-004-002

Which examination must be passed before an Amateur Radio Operator Certificate is issued?

A Basic
B Personality test
C Morse code
D Advanced

B-001-004-003

Holders of which one of the following certificates may be issued an Amateur Radio Operator Certificate?

A Canadian Restricted Operator Certificate - Maritime (ROC-M)
B Canadian Restricted Operator's Certificate - Maritime Commercial (ROC-MC)
C Canadian Restricted Operator Certificate - Aeronautical (ROC-A)
D Canadian Radiocommunication Operator General Certificate Maritime (RGMC)

B-001-004-004

After an Amateur Radio Operator Certificate with Basic qualifications is issued, the holder may be examined for additional qualifications in the following order:

A any order
B Morse code after passing the Advanced
C Morse code after passing the Basic with Honours
D Advanced after passing Morse code

B-001-004-005

One Morse code qualification is available for the Amateur Radio Operator Certificate. It is:

A 5 w.p.m.
B 12 w.p.m.
C 7 w.p.m.
D 15 w.p.m.

B-001-004-006

The holder of an Amateur Radio Operator Certificate with the Basic Qualification is authorized to operate following stations:

A any authorized station except stations authorized in the amateur, aeronautical or maritime services
B a station authorized in the amateur service
C a station authorized in the aeronautical service
D a station authorized in the maritime service

B-001-004-007

What conditions must candidates to amateur radio certification meet?

A. Be at least 14 years of age and a Canadian citizen or permanent resident
B. Have a valid address in Canada
C. Be a Canadian citizen
D. Be a Canadian citizen or permanent resident

B-001-005-001

Radio apparatus may be installed, placed in operation, repaired or maintained by the holder of an Amateur Radio Operator Certificate with Advanced Qualification on behalf of another person:

A. if the transmitter of a station, for which a radio authorization is to be applied for, is type approved and crystal controlled
B. if the other person is the holder of an Amateur Radio Operator Certificate to operate in the amateur radio service
C. pending the granting of a radio authorization, if the apparatus covers the amateur and commercial frequency bands
D. pending the granting of an Amateur Radio Operator Certificate if the apparatus covers the amateur frequency bands only

B-001-005-002

The holder of an Amateur Radio Operator Certificate may design and build from scratch transmitting equipment for use in the amateur radio service provided that person has the:

A Basic and Morse code qualification
B Morse code with Honours qualification
C Basic qualification
D Advanced qualification

B-001-005-003

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:

A install an amateur station, but not operate or permit the operation of the apparatus
B install and operate the radio apparatus, using your own call sign
C modify and repair the radio apparatus but not install it
D not install, place in operation, modify, repair, maintain, or permit the operation of the radio apparatus

B-001-005-004

A radio amateur with Basic and Morse code qualifications may install an amateur station for another person:

A only if the station is for use on one of the VHF bands
B only if the DC power input to the final stage does not exceed 200 watts
C only if the other person is the holder of a valid Amateur Radio Operator Certificate
D only if the final power input does not exceed 100 watts

B-001-006-001

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

A must be operated by a person with an Amateur Certificate and call sign
B must be licensed by Industry Canada
C need not be licensed in isolated areas only
D is exempt from regulatory control by Industry Canada

B-001-006-002

An amateur station may be used to communicate with:

A any stations which are identified for special contests
B armed forces stations during special contests and training exercises
C any station transmitting in the amateur bands
D stations operated under similar authorizations

B-001-006-003

Which of the following statements is not correct?

A. A radio amateur may not operate, or permit to be operated, a radio apparatus which he knows is not performing to the Radiocommunication Regulations
B. A radio amateur may use a linear amplifier to amplify the output of a licence-exempt transmitter outside any amateur radio allocations
C. A considerate operator does not transmit unnecessary signals
D. A courteous operator refrains from using offensive language

B-001-006-004

Which of the following statements is not correct?

A. Except for a certified radio amateur operating within authorized amateur radio allocations, no person shall possess or operate any device for the purpose of amplifying the output power of a licence-exempt radio apparatus
B. A person may operate or permit the operation of radio apparatus only where the apparatus is maintained to the Radiocommunication Regulations tolerances
C. A person may operate an amateur radio station when the person complies with the Standards for the Operation of Radio Stations in the Amateur Radio Service
D. An amateur radio operator transmitting unnecessary or offensive signals does not violate accepted practice

B-001-006-005

Which of the following statements is not correct? A person may operate radio apparatus, authorized in the amateur service:

A. on aeronautical, marine or land mobile frequencies
B. only where the person complies with the Standards for the Operation of Radio Stations in the Amateur Radio Service
C. only where the apparatus is maintained within the performance standards set by Industry Canada regulations and policies
D. except for the amplification of the output power of licence-exempt radio apparatus operating outside authorized amateur radio service allocations

B-001-006-006

Some VHF and UHF FM radios purchased for use in the amateur service can also be programmed to communicate on frequencies used for the land mobile service. Under what conditions is this permissible?

A. The equipment has a RF power output of 2 watts or less
B. The equipment is used in remote areas north of 60 degrees latitude
C. The radio is certified under the proper Radio Standard Specification for use in Canada and licensed by Industry Canada on the specified frequencies
D. The radio operator has a Restricted Operator's Certificate

B-001-007-001

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

A Recreation planning
B Code practice planning
C Emergency planning
D Business planning

B-001-007-002

When is a radio amateur allowed to broadcast information to the general public?

A Only when broadcasts last longer than 15 minutes
B Never
C Only when the operator is being paid
D Only when broadcasts last less than 1 hour

B-001-007-003

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

A When you need to hide the meaning of a message for secrecy
B Never
C When operating a beacon transmitter in a "fox hunt" exercise
D When playing a harmless "practical joke"

B-001-007-004

Which of the following one-way communications may not be transmitted in the amateur service?

A. Radio control commands to model craft
B. Brief transmissions to make adjustments to the station
C. Morse code practice
D. Broadcasts intended for the general public

B-001-007-005

You wish to develop and use a new digital encoding technique to transmit data over amateur radio spectrum. Under what conditions is this permissible?

A When the encoding technique is published in the public domain
B When it is used for music streaming content
C When it is used for commercial traffic
D When it includes sending the amateur station's call sign

B-001-007-006

When may an amateur station in two-way communication transmit an encoded message?

A When transmitting above 450 MHz
B Only when the encoding or cipher is not secret
C During a declared communications emergency
D During contests

B-001-007-007

What are the restrictions on the use of abbreviations or procedural signals in the amateur service?

A. Only "10 codes" are permitted
B. They may be used if the signals or codes are not secret
C. There are no restrictions
D. They are not permitted because they obscure the meaning of a message to government monitoring stations

B-001-007-008

What should you do to keep you station from retransmitting music or signals from a non-amateur station?

A Speak closer to the microphone to increase your signal strength
B Adjust your transceiver noise blanker
C Turn down the volume of background audio
D Turn up the volume of your transmitter

B-001-007-009

The transmission of a secret code by the operator of an amateur station:

A is not permitted
B is permitted for contests
C must be approved by Industry Canada
D is permitted for third-party traffic

B-001-007-010

A radio amateur may be engaged in communication which include the transmission of:

A radiocommunication in support of industrial, business, or professional activities
B commercially recorded material
C Q signals
D programming that originates from a broadcasting undertaking

B-001-007-011

In the amateur radio service, business communications:

A are permitted on some bands
B are only permitted if they are for the safety of life or immediate protection of property
C are not prohibited by regulation
D are not permitted under any circumstance

B-001-008-001

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

A. Only at the address shown on Industry Canada records
B. Anywhere in your call sign prefix area
C. Anywhere in Canada
D. Anywhere in Canada during times of emergency

B-001-008-002

Which type of station may transmit one-way communications?

A. HF station
B. VHF station
C. Beacon station
D. Repeater station

B-001-008-003

Amateur radio operators may install or operate radio apparatus:

A. at any location in Canada
B. only at the address which is on record at Industry Canada
C. at the address which is on record at Industry Canada and at one other location
D. at the address which is on record at Industry Canada and in two mobiles

B-001-008-004

In order to install any radio apparatus, to be used specifically for receiving and automatically retransmitting radiotelephone communications within the same frequency band, a radio amateur must hold an Amateur Radio Operator Certificate, with a minimum of:

A Basic qualification
B Basic with Honours qualification
C Basic and Advanced qualifications
D Basic and Morse code qualifications

B-001-008-005

In order to install any radio apparatus, to be used specifically for an amateur radio club station, the radio amateur must hold an Amateur Radio Operator Certificate, with a minimum of the following qualifications:

A Basic, Advanced and Morse code
B Basic
C Basic with Honours
D Basic and Advanced

B-001-008-006

In order to install or operate a transmitter or RF amplifier that is neither professionally designed nor commercially manufactured for use in the amateur service, a radio amateur must hold an Amateur Operator's Certificate, with a minimum of which qualifications?

A Basic and Morse code
B Basic, Advanced and Morse code
C Basic and Advanced
D Basic with Honours

B-001-009-001

Who is responsible for the proper operation of an amateur station?

A Only the control operator
B Both the control operator and the station owner
C Only the station owner who is the holder of an Amateur Radio Operator Certificate
D The person who owns the station equipment

B-001-009-002

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

A Both of you
B You
C The station owner, unless the station records show that you were the control operator at the time
D The station owner

B-001-009-003

What is your responsibility as a station owner?

A. You must notify Industry Canada if another amateur acts as the control operator
B. You are responsible for the proper operation of the station in accordance with the regulations
C. You must allow another amateur to operate your station upon request
D. You must be present whenever the station is operated

B-001-009-004

Who may be the control operator of an amateur station?

A Any person over 21 years of age with Basic and Morse code qualifications
B Any person over 21 years of age
C Any qualified amateur chosen by the station owner
D Any person over 21 years of age with a Basic Qualification

B-001-009-005

When must an amateur station have a control operator?

A Only when training another amateur
B Whenever the station is transmitting
C A control operator is not needed
D Whenever the station receiver is operated

B-001-009-006

When an amateur station is transmitting, where must its control operator be?

A At the station's control point
B Anywhere in the same building as the transmitter
C At the station's entrance, to control entry to the room
D Anywhere within 50 km of the station location

B-001-009-007

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

A They must first know how to use the right abbreviations and Q signals
B They must first know the right frequencies and emission modes for transmitting
C They must hold suitable amateur radio qualifications before they are allowed to be control operators
D They must not use your equipment without your permission

B-001-009-008

The owner of an amateur station may:

A. permit anyone to use the station without restrictions
B. permit anyone to use the station and take part in communications
C. permit any person to operate the station under the supervision and in the presence of the holder of the amateur operator certificate
D. permit anyone to take part in communications only if prior written permission is received from Industry Canada

B-001-009-009

Which of the following statements is correct?

A. Any person may operate a station in the amateur radio service
B. Any person may operate an amateur station under supervision, and in the presence of, a person holding appropriate qualifications
C. A person, holding only Basic Qualification, may operate another station on 14.2 MHz
D. Radio amateurs may permit any person to operate the station without supervision

B-001-010-001

What is a transmission called that disturbs other communications?

A. Transponder signals
B. Unidentified transmissions
C. Harmful interference
D. Interrupted CW

B-001-010-002

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

A. Only if the station is operating illegally
B. Only if the station begins transmitting on a frequency you are using
C. You may expect, and cause, deliberate interference because it can't be helped during crowded band conditions
D. Never

B-001-010-003

If the regulations say that the amateur service is a secondary user of a frequency band, and another service is a primary user, what does this mean?

A. Amateurs are only allowed to use the frequency band during emergencies
B. Amateurs must increase transmitter power to overcome any interference caused by primary users
C. Amateurs are allowed to use the frequency band only if they do not cause interference to primary users
D. Nothing special: all users of a frequency band have equal rights to operate

B-001-010-004

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

A The station operator with a lower power output must yield the frequency to the station with a higher power output

B Station operators in ITU Regions 1 and 3 must yield the frequency to stations in ITU Region 2

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

D The station operator with a lesser qualification must yield the frequency to an operator of higher qualification

B-001-010-005

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

A Adjacent interference

B Disruptive interference

C Harmful interference

D Intentional interference

B-001-010-006

Where interference to the reception of radiocommunications is caused by the operation of an amateur station:

A. the amateur station operator is not obligated to take any action
B. the amateur station operator may continue to operate without restrictions
C. the amateur station operator may continue to operate and the necessary steps can be taken when the amateur operator can afford it
D. the Minister may require that the necessary steps for the prevention of the interference be taken by the radio amateur

B-001-010-007

Radio amateur operation must not cause interference to other radio services operating in which of the following bands?

A 144.0 to 148.0 MHz

B 14.0 to 14.2 MHz

C 430.0 to 450.0 MHz

D 7.0 to 7.1 MHz

B-001-010-008

Radio amateur operations are not ARE NOT protected from interference caused by another service operating in which of the following frequency bands?

A 50 to 54 MHz

B 902 to 928 MHz

C 144 to 148 MHz

D 222 to 225 MHz

B-001-010-009

Which of the following is not correct? The operator of an amateur station:

A. may conduct technical experiments using the station apparatus
B. may make trials or tests, except if there is a possibility of interference to other stations
C. may make trials or tests, even though there is a possibility of interfering with other stations
D. shall not cause harmful interference to a station in another service which has primary use of that band

B-001-010-010

Which of these amateur bands may be heavily occupied by licence exempt devices?

A. 430 to 450 MHz
B. 135.7 to 137.8 kHz
C. 902 to 928 MHz
D. 3.5 to 4.0 MHz

B-001-010-011

The amateur radio service is authorized to share a portion of what Industrial Scientific Medical (ISM) band that is heavily used by licence exempt devices?

A. 2300 to 2450 MHz
B. 430 to 450 MHz
C. 144 to 148 MHz
D. 1240 to 1300 MHz

B-001-011-001

Amateur radio stations may communicate:

A. only with other amateur stations
B. with anyone who uses international Morse code
C. with non amateur stations
D. with any station involved in a real or simulated emergency

B-001-011-002

During relief operations in the days following a disaster, when may an amateur use his equipment to communicate on frequencies outside amateur bands?

A. Never
B. When relaying messages on behalf of government agencies
C. When messages are destined to agencies without amateur radio support
D. When normal communication systems are overloaded, damaged or disrupted

B-001-011-003

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

A you may offer assistance after contacting Industry Canada for permission to do so
B you may not offer assistance
C you should offer assistance
D you may offer assistance using international Morse code only

B-001-011-004

In the amateur radio service, it is permissible to broadcast:

A. radio communications required for the immediate safety of life of individuals or the immediate protection of property
B. music
C. commercially recorded material
D. programming that originates from a broadcast undertaking

B-001-011-005

An amateur radio station in distress may:

A only use radiocommunication bands for which the operator is qualified to use
B use any means of radiocommunication, but only on internationally recognized emergency channels
C only Morse code communications on internationally recognized emergency channels
D any means of radiocommunication

B-001-011-006

During a disaster, when may an amateur station make transmissions necessary to meet essential communication needs and assist relief operations?

A Never: only official emergency stations may transmit in a disaster
B When normal communication systems are working but are not convenient
C Only when the local emergency net is activated
D When normal communication systems are overloaded, damaged or disrupted

B-001-011-007

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

A. 200 watts PEP
B. There are no limitations for a station in distress
C. 1000 watts PEP during daylight hours, reduced to 200 watts PEP during the night
D. 1500 watts PEP

B-001-011-008

During a disaster:

A. most communications are handled by nets using predetermined frequencies in amateur bands. Operators not directly involved with disaster communications are requested to avoid making unnecessary transmissions on or near frequencies being used for disaster communications
B. use only frequencies in the 80 metre band
C. use only frequencies in the 40 metre band
D. use any United Nations approved frequency

B-001-011-009

Messages from recognized public service agencies may be handled by amateur radio stations:

A when Industry Canada has issued a special authorization
B only on the 7 and 14 MHz bands
C during peace time and civil emergencies and exercises
D using Morse code only

B-001-011-010

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

A the other station is not operating according to the Radiocommunication Regulations
B you both wish to contact the same station
C the other station is interfering with your transmission
D your station is directly involved with a distress situation

B-001-012-001

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

A Any amount agreed upon in advance
B No payment of any kind is allowed
C Donation of amateur equipment
D Donation of equipment repairs

B-001-012-002

Radiocommunications transmitted by stations other than a broadcasting station may be divulged or used:

A during peacetime civil emergencies
B if it is transmitted by an amateur station
C if transmitted by any station using the international Morse code
D if transmitted in English or French

B-001-012-003

The operator of an amateur station:

A. shall charge no more than $10 for each message that the person transmits or receives
B. may accept a gift or gratuity in lieu of remuneration for any message that the person transmits or receives
C. shall not demand or accept remuneration in any form, in respect of a radiocommunication that the person transmits or receives
D. shall charge no less than $10 for each message that the person transmits or receives

B-001-012-004

Which of the following is not an exception from the penalties under the Act, for divulging, intercepting or using information obtained through radiocommunication, other than broadcasting?

A. Where it is to provide information for a journalist
B. Where it is for the purpose of preserving or protecting property, or for the prevention of harm to a person
C. Where it is for the purpose of giving evidence in a criminal or civil proceeding in which persons are required to give evidence
D. Where it is on behalf of Canada, for the purpose of international or national defence or security

B-001-013-001

Which of the following call signs is a valid Canadian amateur radio call sign?

A. KA9OLS
B. VA3XYZ
C. SM2CAN
D. BY7HY

B-001-013-002

How often must an amateur station be identified?

A. At least once during each transmission
B. At the beginning and end of each transmission
C. At least every thirty minutes, and at the beginning and at the end of a contact
D. At the beginning of a contact and at least every thirty minutes after that

B-001-013-003

What do you transmit to identify your amateur station?

A. Your first name and your location
B. Your full name
C. Your call sign
D. Your "handle"

B-001-013-004

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

A. No identification is required
B. Both stations must transmit both call signs
C. One of the stations must give both stations' call signs
D. Each station must transmit its own call sign

B-001-013-005

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

A. No identification is required
B. One of the stations must transmit both stations' call signs
C. Both stations must transmit both call signs
D. Each station must transmit its own call sign

B-001-013-006

What is the longest period of time an amateur station can transmit, without identifying by call sign?

A. 20 minutes
B. 15 minutes
C. 10 minutes
D. 30 minutes

B-001-013-007

When may an amateur transmit unidentified communications?

A. Only if it does not interfere with others
B. Only for two-way or third-party communications
C. Never, except to control a model craft
D. Only for brief tests not meant as messages

B-001-013-008

What language may you use when

identifying your station?

A. Any language being used for a contact
B. Any language being used for a contact, providing Canada has a third-party communications agreement with that country
C. Any language of a country which is a member of the International Telecommunication Union
D. English or French

B-001-013-009

The call sign of an amateur station must be transmitted:

A when requested to do so by the station being called

B at the beginning & at the end of each exchange of communications and at intervals not greater than 30 minutes

C at intervals not greater than three minutes when using voice communications

D at intervals not greater than ten minutes when using Morse code

B-001-013-010

The call sign of an amateur station must be sent:

A every minute

B every 15 minutes

C once after initial contact

D at the beginning & end of each exchange of communications, & at least every 30 minutes, while in communications

B-001-013-011

The call sign of a Canadian amateur radio station would normally start with the letters:

A EA, EI, RO or UY

B VA, VE, VO or VY

C GA, GE, MO or VQ

D A, K, N or W

B-001-014-001

If a non-amateur friend is using your station to talk to someone in Canada, and a foreign station breaks in to talk to your friend, what should you do?

A Report the incident to the foreign amateur's government

B Stop all discussions and quickly sign off

C Have your friend wait until you determine from the foreign station if their administration permits third-party traffic

D Since you can talk to foreign amateurs, your friend may keep talking as long as you are the control operator

B-001-014-002

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

A You must continuously monitor and supervise the third party's participation

B You must key the transmitter and make the station identification

C You must monitor and supervise the communication only if contacts are made on frequencies below 30 MHz

D You must monitor and supervise the communication only if contacts are made in countries which have no third party communications

B-001-014-003

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

A. the communication is transmitted by secret code
B. prior remuneration has been received
C. such communications have been authorized by the other country concerned
D. the amateur station has received written authorization from Industry Canada to pass third party traffic

B-001-014-004

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

A without written permission from Industry Canada

B until he has properly identified his station

C unless he is passing third-party traffic

D when that country has notified the International Telecommunication Union that it objects to such communications

B-001-014-005

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

A the countries for which the traffic is intended have registered their consent to such communications with the ITU

B radiotelegraphy is used

C the countries concerned have authorized such communications

D English or French is used to identify the station at the end of each transmission

B-001-014-006

Amateur third party communications is:

A the transmission of commercial or secret messages

B a simultaneous communication between three operators

C none of these answers

D the transmission of non-commercial or personal messages to or on behalf of a third party

B-001-014-007

International 3rd party amateur radio communication in case of emergencies or disaster relief is expressly permitted unless:

A the foreign administration is in a declared state of war

B internet service is working well in the foreign country involved

C specifically prohibited by the foreign administration concerned

D satellite communication can be originated in the disaster area

B-001-014-008

One of the following is not considered to be communications on behalf of a third party, even though the message is originated by, or addressed to, a non-amateur:

A messages originated from Canadian Forces Affiliate Radio Service (CFARS)
B messages that are handled within a local network
C messages addressed to points within Canada
D all messages received from Canadian stations

B-001-014-009

One of the following is not considered to be communications on behalf of a third party, even though the message may be originated by, or addressed to, a non-amateur:

A all messages originated by Canadian amateur stations
B messages addressed to points within Canada from the United States
C messages that are handled within local networks during a simulated emergency exercise
D messages that originate from the United States Military Auxiliary Radio System (MARS)

B-001-014-010

Which of the following is not correct? While operating in Canada a radio amateur licensed by the Government of the United States must:

A. obtain a Canadian amateur certificate before operating in Canada
B. add to his call sign the Canadian call sign prefix for the geographic location of the station
C. qualify his identification when operating phone by adding to the call sign the word "mobile" or "portable" or when operating Morse code by adding a slash "/"
D. identify with the call sign assigned by the FCC

B-001-014-011

Which of the following statements is not correct? A Canadian radio amateur may, on amateur frequencies,:

A. pass messages originating from or destined to the Canadian Forces Affiliate Radio Service (CFARS)
B. communicate with a similar station of a country which has not notified ITU that it objects to such communications
C. pass third-party traffic with all duly licensed amateur stations in any country which is a member of the ITU
D. pass messages originating from or destined to the United States Military Auxiliary Radio System (MARS)

B-001-015-001

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

A. Any privileges allowed by the additional qualifications
B. All the emission privileges of the additional qualifications, but only the frequency privileges of your qualifications
C. All the frequency privileges of the additional qualifications, but only the emission privileges of your qualifications
D. Only the privileges allowed by your qualifications

B-001-015-002

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

A All the emission privileges of the additional qualifications, but only the frequency privileges of your qualifications

B All the frequency privileges of the additional qualifications, but only the emission privileges of your qualifications

C Only the privileges allowed by your qualifications

D Any privileges allowed by the additional qualifications

B-001-015-003

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

A You must pass a Morse code test

B You must attend a class to learn about HF communications

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

D You must notify Industry Canada that you intend to operate on the HF bands

B-001-015-004

The holder of an amateur radio certificate may operate radio controlled models:

A on all frequencies above 30 MHz

B if the control transmitter does not exceed 15 kHz of occupied bandwidth

C if the frequency used is below 30 MHz

D if only pulse modulation is used

B-001-015-005

In Canada, the 75/80 metre amateur band corresponds in frequency to:

A 3.0 to 3.5 MHz

B 4.0 to 4.5 MHz

C 4.5 to 5.0 MHz

D 3.5 to 4.0 MHz

B-001-015-006

In Canada, the 160 metre amateur band corresponds in frequency to:

A 1.5 to 2.0 MHz

B 2.0 to 2.25 MHz

C 2.25 to 2.5 MHz

D 1.8 to 2.0 MHz

B-001-015-007

In Canada, the 40 metre amateur band corresponds in frequency to:

A 6.0 to 6.3 MHz
B 7.7 to 8.0 MHz
C 7.0 to 7.3 MHz
D 6.5 to 6.8 MHz

B-001-015-008

In Canada, the 20 meter amateur band corresponds in frequency to:

A. 14.000 to 14.350 MHz
B. 13.500 to 14.000 MHz
C. 15.000 to 15.750 MHz
D. 16.350 to 16.830 MHz

B-001-015-009

In Canada, the 15 metre amateur band corresponds in frequency to:

A. 21.000 to 21.450 MHz
B. 18.068 to 18.168 MHz
C. 14.000 to 14.350 MHz
D. 28.000 to 29.700 MHz

B-001-015-010

In Canada, the 10 metre amateur band corresponds in frequency to:

A. 28.000 to 29.700 MHz
B. 24.890 to 24.990 MHz
C. 21.000 to 21.450 MHz
D. 50.000 to 54.000 MHz

B-001-015-011

In Canada, radio amateurs may use which of the following for radio control of models:

A. 50 to 54 MHz only
B. all amateur frequency bands
C. 50 to 54, 144 to 148, and 222 to 225 MHz only
D. all amateur frequency bands above 30 MHz

B-001-016-001

What is the maximum authorized bandwidth within the frequency range of 50 to 148 MHz?

A. 30 kHz
B. 20 kHz
C. The total bandwidth shall not exceed that of a single-sideband phone emission
D. The total bandwidth shall not exceed 10 times that of a CW emission

B-001-016-002

The maximum bandwidth of an amateur station's transmission allowed in the band 28 to 29.7 MHz is:

A 15 kHz
B 20 kHz
C 6 kHz
D 30 kHz

B-001-016-003

Except for one band, the maximum bandwidth of an amateur station's transmission allowed between 7 and 28 MHz is:

A 30 kHz
B 6 kHz
C 15 kHz
D 20 kHz

B-001-016-004

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

A 20 kHz
B 15 kHz
C 30 kHz
D 6 kHz

B-001-016-005

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

A 30 kHz
B 20 kHz
C 6 kHz
D 15 kHz

B-001-016-006

Which of the following bands of amateur frequencies has a maximum allowed bandwidth of less than 6 kHz. That band is:

A. 24.89 to 24.99 MHz
B. 1.8 to 2.0 MHz
C. 10.1 to 10.15 MHz
D. 18.068 to 18.168 MHz

B-001-016-007

Single sideband is not permitted in the band:

A 7.0 to 7.3 MHz
B 10.1 to 10.15 MHz
C 18.068 to 18.168 MHz
D 24.89 to 24.99 MHz

B-001-016-008

What precaution must an amateur radio operator take when transmitting near band edges?

A Make sure that the emission mode is compatible with agreed band plans
B Watch the standing wave ratio so as not to damage the transmitter
C Ensure that the bandwidth required on either side of the carrier frequency does not fall out of band
D Restrict operation to telegraphy

B-001-016-009

Which of the following answers is not correct? Based on the bandwidth required, the following modes may be transmitted on these frequencies:

A fast-scan television (ATV) on 440 MHz
B fast-scan television (ATV) on 145 MHz
C AMTOR on 14.08 MHz
D 300 bps packet on 10.145 MHz

B-001-016-010

Which of the following answers is not correct? Based on the bandwidth required, the following modes may be transmitted on these frequencies:

A slow-scan television (SSTV) on 14.23 MHz
B frequency modulation (FM) on 29.6 MHz
C single-sideband (SSB) on 3.76 MHz
D fast-scan television (ATV) on 14.23 MHz

B-001-016-011

Which of the following answers is not correct? Based on the bandwidth required, the following modes may be transmitted on these frequencies:

A Morse radiotelegraphy (CW) on 10.11 MHz
B 300 bps packet on 10.148 MHz
C single-sideband (SSB) on 10.12 MHz
D frequency modulation (FM) on 29.6 MHz

B-001-017-001

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

A 2000 watts PEP output
B The minimum legal power necessary to communicate
C 25 watts PEP output
D 250 watts PEP output

B-001-017-002

What is the most FM transmitter power a holder of only Basic Qualification may use on 147 MHz?

A 25 watts PEP output
B 250 W DC input
C 1000 watts DC input
D 200 watts PEP output

B-001-017-003

Where in your station can you verify that legal power limits are respected?

A At the power supply terminals inside the transmitter or amplifier
B At the antenna connector of the transmitter or amplifier
C At the power amplifier RF input terminals inside the transmitter or amplifier
D On the antenna itself, after the transmission line

B-001-017-004

What is the maximum transmitting output power an amateur station may use on 3750 kHz, if the operator has Basic and Morse code qualifications?

A 560 watts PEP output for SSB operation
B 1000 watts PEP output for SSB operation
C 1500 watts PEP output for SSB operation
D 2000 watts PEP output for SSB operation

B-001-017-005

What is the maximum transmitting power an amateur station may use for SSB operation on 7055 kHz, if the operator has Basic with Honours qualifications?

A 2000 watts PEP output
B 200 watts PEP output
C 560 watts PEP output
D 1000 watts PEP output

B-001-017-006

The DC power input to the anode or collector circuit of the final RF stage of a transmitter, used by a holder of an Amateur Radio Operator Certificate with Advanced Qualification, shall not exceed:

A 250 watts
B 500 watts
C 750 watts
D 1000 watts

B-001-017-007

The maximum DC input to the final stage of an amateur transmitter, when the operator is the holder of both the Basic and Advanced qualifications, is:

A 1000 watts
B 250 watts
C 1500 watts
D 500 watts

B-001-017-008

The operator of an amateur station, who is the holder of a Basic Qualification, shall ensure that the station power, when expressed as RF output power measured across an impedance matched load, does not exceed:

A 560 watts peak-envelope power, for transmitters producing any type of single sideband emission
B 2500 watts peak power
C 1000 watts carrier power for transmitters producing other emissions
D 150 watts peak power

B-001-017-009

The holder of an Amateur Radio Operator Certificate with Basic Qualification is limited to a maximum of _____ watts when expressed as direct current input power to the anode or collector circuit of the transmitter stage supplying radio frequency energy to the antenna:

A 1000
B 750
C 100
D 250

B-001-017-010

Which of the following is the most powerful equipment the holder of a Basic with Honours certificate can legally operate at full power?

A 160 watts carrier power VHF amplifier
B 100 watts carrier power HF transmitter
C 200 watts carrier power HF transceiver
D 600 watts PEP HF linear amplifier

B-001-018-001

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

A Remote-control station
B Beacon station
C Repeater station
D Space station control and telemetry link

B-001-018-002

An unmodulated carrier may be transmitted only:

A when transmitting SSB
B in frequency bands below 30 MHz
C for brief tests on frequencies below 30 MHz
D if the output to the final RF amplifier is kept under 5W

B-001-018-003

Radiotelephone signals in a frequency band below ____ MHz cannot be automatically retransmitted, unless these signals are received from a station operated by a person qualified to transmit on frequencies below the above frequency:

A. 29.5 MHz
B. 9.7 MHz
C. 50 MHz
D. 144 MHz

B-001-018-004

Which of the following statements is not correct? Radiotelephone signals may be retransmitted:

A. in the 144-148 MHz frequency band, when received from a station operated by a person with only Basic Qualification
B. in the 21 MHz band, when received in a VHF band, from a station operated by a person with only Basic Qualification
C. in the 29.5-29.7 MHz band, when received in a VHF band, from a station operated by a person with only Basic Qualification
D. in the 50-54 MHz frequency band, when received from a station operated by a person with only Basic Qualification

B-001-019-001

When operating on frequencies below 148 MHz:

A the bandwidth for any emission must not exceed 3 kHz
B the frequency stability of the transmitter must be at least two parts per million over a period of one hour
C an overmodulation indicator must be used
D the frequency stability must be comparable to crystal control

B-001-019-002

A reliable means to prevent or indicate overmodulation must be employed at an amateur station if:

A radiotelephony is used
B DC input power to the anode or collector circuit of the final RF stage is in excess of 250 watts
C radiotelegraphy is used
D persons other than the holder of the authorization use the station

B-001-019-003

An amateur station using radiotelephony must install a device for indicating or preventing:

A resonance
B antenna power
C plate voltage
D overmodulation

B-001-019-004

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

A 75 percent
B 50 percent
C 90 percent
D 100 percent

B-001-019-005

All amateur stations, regardless of the mode of transmission used, must be equipped with:

A a DC power meter
B an overmodulation indicating device
C a dummy antenna
D a reliable means of determining the operating radio frequency

B-001-019-006

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

A 100 percent
B 90 percent
C 75 percent
D 50 percent

B-001-020-001

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

A Messages of a technical nature or personal remarks of relative unimportance
B Messages of any type, if the foreign country allows third-party communications with Canada
C Messages that are not religious, political, or patriotic in nature
D Messages of any type

B-001-020-002

The operator of an amateur station shall ensure that:

A communications are limited to messages of a technical or personal nature
B communications are exchanged only with commercial stations
C all communications are conducted in secret code
D charges are properly applied to all third-party communications

B-001-020-003

Which of the following is not a provision of the ITU Radio Regulations which apply to Canadian radio amateurs?

A. It is forbidden to transmit international messages on behalf of third parties, unless those countries make special arrangements
B. Radiocommunications between countries shall be forbidden, if the administration of one of the countries objects
C. Administrations shall take such measures as they judge necessary to verify the operational and technical qualifications of amateurs
D. Transmissions between countries shall not include any messages of a technical nature, or remarks of a personal character

B-001-020-004

The ITU Radio Regulations limit those radio amateurs, who have not demonstrated proficiency in Morse code, to frequencies above:

A 1.8 MHz
B 3.5MHz
C 28 MHz
D none of the other answers

B-001-020-005

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

A International Amateur Radio Union
B International Telecommunication Union
C American Radio Relay League
D Radio Amateurs of Canada Inc.

B-001-021-001

In which International Telecommunication Union Region is Canada?

A Region 2
B Region 4
C Region 3
D Region 1

B-001-021-002

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

A ITU Region 2
B ITU Region 3
C ITU Region 1
D Those applicable to US radio amateurs

B-001-021-003

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

A ITU Region 2
B Those applicable to US radio amateurs
C Those applicable to Canadian radio amateurs
D ITU Region 1

B-001-021-004

Australia, Japan, and Southeast Asia are in which ITU Region?

A Region 1
B Region 2
C Region 4
D Region 3

B-001-021-005

Canada is located in ITU Region:

A Region 3
B Region 4
C Region 2
D Region 1

B-001-022-001

Which of these statements is not correct?

A. The fee for taking an examination for an Amateur Radio Operator Certificate at an Industry Canada office is $5 per qualification
B. An accredited examiner may recover the cost of administering an examination
C. An accredited volunteer examiner must hold an Amateur Radio Operator Certificate with Basic, Advanced, and Morse code qualifications
D. The fee for taking an examination for an Amateur Radio Operator Certificate at an Industry Canada office is $20 per qualification

B-001-022-002

Which of the following statements is not correct?

A. A disabled candidate must pass a normal amateur radio certificate examination before being granted any qualification
B. A disabled candidate, taking a Morse code sending test, may be allowed to recite the examination text in Morse code sounds
C. Examinations for disabled candidates may be given orally, or tailored to the candidate's ability to complete the examination
D. An accredited examiner may recover the cost of administering an examination.

B-001-022-003

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

A always $20 per qualification
B always free of charge
C always $20 per visit regardless of the number of examinations
D to be negotiated between examiner and candidate

B-001-022-004

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

A $20 per visit, regardless of the number of qualification examinations
B no charge for qualification examinations
C $5 per qualification examination
D $20 per qualification

B-001-022-005

Which of the following statements is false?

A. A candidate who fails a written examination due to not usually speaking English or French may be given an oral examination
B. An examiner may request medical evidence from a practicing medical physician before accommodating testing
C. A candidate with insufficient knowledge of English or French may be accompanied by an interpreter
D. A candidate who fails a written examination for lack of reading skills may be given an oral examination

B-001-023-001

Which of these statements about the installation or modification of an antenna structure is not correct?

A A radio amateur may erect any size antenna structure without consulting neighbours or the local land-use authority

B A radio amateur must follow Industry Canada's antenna siting procedures.

C Industry Canada expects radio amateurs to address community concerns in a responsible manner

D Prior to an installation, for which community concerns could be raised, radio amateurs may be required to consult with their land-use authority

B-001-023-002

Who has authority over antenna installations including antenna masts and towers?

A The local municipal government

B The majority of neighbours residing within a distance of three times the proposed antenna structure height

C The Minister of Industry

D The person planning to use the tower or their spouse

B-001-023-003

If you are planning to install or modify an antenna system under what conditions may you not be required to contact land use authorities to determine public consultation requirements?

A In a rural area

B When the structure is part of an amateur radio antenna

C When transmitting will only be done at low power

D When an exclusion criterion defined by Industry Canada applies

B-001-023-004

The land use authority has not established a process for public consultation for antenna systems.
The radio amateur planning to install or modify an antenna system:

A. must fulfill the public consultation requirements set out in Industry Canada's Default Public Consultation Process unless the land use authority excludes their type of proposal from consultation or it is excluded by Industry Canada's process
B. can proceed with their project without public consultation
C. must implement a public consultation process of their own design
D. must wait for the land use authority to develop a public consultation process

B-001-023-005

Which is not an element of the Industry Canada Public Consultation Process for antenna systems?

A. Providing an opportunity for the public to respond regarding measures to address reasonable and relevant concerns
B. Participating in public meetings on the project
C. Providing written notice
D. Addressing relevant questions comments and concerns

B-001-023-006

The Default Public Consultation Process for antenna systems requires proponents to address:

A opposition to the project
B reasonable and relevant concerns provided in writing within the 30 day public comment period
C all questions, comments and concerns raised
D comments reported in media reporting on the proposal

B-001-023-007

Where a municipality has developed a public consultation process which of the following options best describes all circumstances when public consultation may not be required?

A. Exclusions listed in both CPC-2-0-03 and the Local land use authority process
B. Exclusions listed in either CPC-2-0-03 or the Local land use authority process
C. Exclusions listed in the Industry Canada Client Procedures Circular on Radiocommunications and Broadcasting Antenna Systems CPC-2-0-03
D. Exclusions defined in the Local land use authority process

B-001-023-008

Where the proponent and a stakeholder other than the general public reach an impasse over a proposed antenna system the final decision will:

A be made by the municipality in which the antenna is to be built
B be made by a majority vote of those residing within a radius of three times the antenna structure height
C be made by Industry Canada
D be postponed until those in dispute reach an agreement

B-001-023-009

In general, what is the tallest amateur radio antenna system excluded from the requirement to consult with the land use authority and the public where there is a land use authority defined public consultation process?

A. 21m
B. the taller of the height exclusion in the land use authority public consultation process and Industry Canada's antenna siting procedures
C. 10m
D. 15m

B-001-023-010

Where a land use authority or municipality has established a public consultation process for antenna systems, who determines how public consultation should take place?

A Industry Canada
B The person planning to erect an antenna structure
C The provincial government
D The municipality or local land use authority

B-001-024-001

What organization has published safety guidelines for the maximum limits of RF energy near the human body?

A Health Canada
B Canadian Standards Association
C Environment Canada
D Transport Canada

B-001-024-002

What is the purpose of the Safety Code 6?

A It lists all RF frequency allocations for interference protection
B It sets transmitter power limits for interference protection
C It sets antenna height limits for aircraft protection
D It gives RF exposure limits for the human body

B-001-024-003

According to Safety Code 6, what frequencies cause us the greatest risk from RF energy?

A 30 to 300 MHz
B 300 to 3000 MHz
C Above 1500 MHz
D 3 to 30 MHz

B-001-024-004

Why is the limit of exposure to RF the lowest in the frequency range of 30 MHz to 300 MHz, according to Safety Code 6?

A There are fewer transmitters operating in this range
B Most transmissions in this range are for a longer time
C The human body absorbs RF energy the most in this range
D There are more transmitters operating in this range

B-001-024-005

According to Safety Code 6, what is the maximum safe power output to the antenna of a hand-held VHF or UHF radio?

A Not specified
B 10 watts
C 25 watts
D 125 milliwatts

B-001-024-006

Which of the following statements is not correct?

A Maximum exposure levels of RF fields to the general population, in the frequency range 10 to 300 MHz, is 28 V/m RMS (E-field)
B Permissible exposure levels of RF fields increases as frequency is increased from 300 MHz to 1.5 GHz
C Permissible exposure levels of RF fields increases as frequency is decreased from 10 MHz to 1 MHz
D Permissible exposure levels of RF fields decreases as frequency is decreased below 10 MHz

B-001-024-007

The permissible exposure levels of RF fields:

A decreases, as frequency is increased above 300 MHz
B increases, as frequency is increased from 300 MHz to 1.5 GHz
C decreases, as frequency is decreased below 10 MHz
D increases, as frequency is increased from 10 MHz to 300 MHz

B-001-024-008

Which statement is not correct?

A. Safety Code 6 uses different units for the magnetic field strength and the electric field strength when stating limits
B. Safety Code 6 specifies lower exposure limits for the general public in uncontrolled areas than it does for people in controlled areas
C. hand held transmitters are excluded from Safety Code 6 requirements
D. Antenna gain, distance, transmitter power and frequency are all factors which influence the electric field strength and a person's exposure to radio energy.

B-001-024-009

Which statement is correct?

A. Safety Code 6 sets limits for RF exposure from all radio transmitters regardless of power output
B. Safety Code 6 regulates the operation of receivers only
C. The operation of portable transmitting equipment is of no concern in Safety Code 6
D. Portable transmitters, operating below 1 GHz, with an output power equal to, or less than 7 watts, are exempt from the requirements of Safety Code 6

B-001-024-010

Which of these statements about Safety Code 6 is false?

A. Safety Code 6 sets limits for induced currents, electrical field strength and magnetic field strength from electromagnetic radiation
B. Safety Code 6 sets limits for allowable rates at which RF energy is absorbed in the body (Specific Absorption Rate)
C. Safety Code 6 sets limits in terms of power levels fed into antennas
D. Safety Code 6 sets limits for contact currents that could be drawn from ungrounded or poorly grounded objects

B-001-025-001

In the event of the malfunctioning of a neighbour's broadcast FM receiver and stereo system, it will be deemed that the affected equipment's lack of immunity is the cause if the field strength:

A at the transmitting location is below the radio amateur's maximum allowable transmitter power
B at the transmitting location is above 100 watts
C near the affected equipment is above Industry Canada's specified immunity criteria
D on the premises of the affected equipment is below Industry Canada's specified immunity criteria

B-001-025-002

In the event of interference to a neighbour's television receiver, according to EMCAB-2 it will be deemed that a radio amateur's transmission is the cause of the problem if the field strength:

A on the neighbour's premises is above Industry Canada's specified immunity criteria
B near the TV is below Industry Canada's specified immunity criteria
C at the transmitting location is below the radio amateur's maximum allowable transmitter power
D at the transmitting location is above the radio amateur's maximum allowable transmitter power

B-001-025-003

Which of the following is defined in EMCAB-2 as "any device, machinery or equipment, other than radio apparatus, the use or functioning of which is, or can be, adversely affected by radiocommunication emissions"?

A Cable television converters
B Audio and video recorders
C Broadcast receivers
D Radio-sensitive equipment

B-001-025-004

According to EMCAB-2 which of the following types of equipment is not included in the list of field strength criteria for resolution of immunity complaints?

A Broadcast transmitters
B Broadcast receivers
C Associated equipment
D Radio-sensitive equipment

B-002-001-001

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

A Say the other operator's name, then your call sign three times
B Say, "Breaker, breaker,"
C Say the call sign of the station you want to contact three times
D Say the call sign of the station you want to contact, then your call sign

B-002-001-002

What is the main purpose of a repeater?

A To increase the range of portable and mobile stations
B To link amateur stations with the telephone system
C To retransmit weather information during severe storm warnings
D To make local information available 24 hours a day

B-002-001-003

What is frequency coordination on VHF and UHF bands?

A The selection of simplex frequencies by individual operators
B A part of the planning prior to a contest
C A process which seeks to carefully assign frequencies so as to minimize interference with neighbouring repeaters
D A band plan detailing modes and frequency segments within a band

B-002-001-004

What is the purpose of a repeater time-out timer?

A It interrupts lengthy transmissions without pauses
B It lets a repeater have a rest period after heavy use
C It logs repeater transmit time to predict when a repeater will fail
D It tells how long someone has been using a repeater

B-002-001-005

What is a CTCSS tone?

A A tone used by repeaters to mark the end of a transmission
B A special signal used for telemetry between amateur space stations and Earth stations
C A special signal used for radio control of model craft
D A sub-audible tone that activates a receiver audio output when present

B-002-001-006

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

A Wait for the station to call "CQ", then answer it
B Say the station's call sign, then identify your own station
C Say "break, break 79," then say the station's call sign
D Say "CQ" three times, then say the station's call sign

B-002-001-007

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

A To reach for pencil and paper for third-party communications
B To dial up the repeater's autopatch
C To listen for anyone else wanting to use the repeater
D To check the SWR of the repeater

B-002-001-008

Why should you keep transmissions short when using a repeater?

A To give any listening non-hams a chance to respond
B To see if the receiving station operator is still awake
C A long transmission may prevent someone with an emergency from using the repeater
D To keep long-distance charges down

B-002-001-009

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

A Shout, "break, break!" to show that you're eager to join the conversation
B Turn on an amplifier and override whoever is talking
C Say your call sign during a break between transmissions
D Wait for the end of a transmission and start calling the desired party

B-002-001-010

What is the accepted way to ask someone their location when using a repeater?

A What is your 20?
B Locations are not normally told by radio
C What is your 12?
D Where are you?

B-002-001-011

FM repeater operation on the 2 metre band uses one frequency for transmission and one for reception. The difference in frequency between the transmit and receive frequency is normally:

A 800 kHz
B 1 000 kHz
C 400 kHz
D 600 kHz

B-002-002-001

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

A Talk louder
B Turn up your microphone gain
C Use Standard International Phonetics for each letter of your call sign
D Use any words which start with the same letters as your call sign for each letter of your call

B-002-002-002

What can you use as an aid for correct station identification when using phone?

A Unique words of your choice
B A speech compressor
C The Standard International Phonetic Alphabet
D Q signals

B-002-002-003

What is the Standard International Phonetic for the letter A?

A Able
B Adam
C America
D Alfa

B-002-002-004

What is the Standard International Phonetic for the letter B?

A Bravo
B Brazil
C Borneo
D Baker

B-002-002-005

What is the Standard International Phonetic for the letter D?

A Dog
B Denmark
C David
D Delta

B-002-002-006

What is the Standard International Phonetic for the letter E?

A Edward
B England
C Echo
D Easy

B-002-002-007

What is the Standard International Phonetic for the letter G?

A Germany
B Gibraltar
C Golf
D George

B-002-002-008

What is the Standard International Phonetic for the letter I?

A Item
B India
C Iran
D Italy

B-002-002-009

What is the Standard International Phonetic for the letter L?

A London
B Luxembourg
C Lima
D Love

B-002-002-010

What is the Standard International Phonetic for the letter P?

A Papa
B Portugal
C Paris
D Peter

B-002-002-011

What is the Standard International Phonetic for the letter R?

A Romania
B Romeo
C Roger
D Radio

B-002-003-001

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

A Say "CQ" at least ten times, followed by "this is," followed by your call sign spoken once
B Say "CQ" three times, followed by "this is," followed by your call sign spoken three times
C Say "CQ" once, followed by "this is," followed by your call sign spoken three times
D Say "CQ" at least five times, followed by "this is," followed by your call sign spoken once

B-002-003-002

How should you answer a voice CQ call?

A Say the other station's call sign at least five times phonetically, followed by "this is," then your call sign twice
B Say the other station's call sign at least three times, followed by "this is," and your call sign at least five times phonetically
C Say the other station's call sign at least ten times, followed by "this is," then your call sign at least twice
D Say the other station's call sign once, followed by "this is," then your call sign given phonetically

B-002-003-003

What is simplex operation?

A Transmitting on one frequency and receiving on another
B Transmitting one-way communications
C Transmitting and receiving on the same frequency
D Transmitting and receiving over a wide area

B-002-003-004

When should you consider using simplex operation instead of a repeater?

A When the most reliable communications are needed
B When an emergency telephone call is needed
C When you are traveling and need some local information
D When signals are reliable between communicating parties without using a repeater

B-002-003-005

Why should local amateur communications use VHF and UHF frequencies instead of HF frequencies?

A Because signals are stronger on VHF and UHF frequencies
B To minimize interference on HF bands capable of long-distance communication
C Because greater output power is permitted on VHF and UHF
D Because HF transmissions are not propagated locally

B-002-003-006

Why should we be careful in choosing a simplex frequency when operating VHF or UHF FM?

A Interference may be caused to unlicensed devices operating in the same band
B Implanted medical devices share the same spectrum
C Some frequencies are designated for narrow band FM and others for wideband FM
D You may inadvertently choose a channel that is the input to a local repeater

B-002-003-007

If you are talking to a station using a repeater, how would you find out if you could communicate using simplex instead?

A See if you can clearly receive the station on the repeater's input frequency
B See if a third station can clearly receive both of you
C See if you can clearly receive a more distant repeater
D See if you can clearly receive the station on a lower frequency band

B-002-003-008

If you are operating simplex on a repeater frequency, why would it be good amateur practice to change to another frequency?

A There are more repeater operators than simplex operators
B Changing the repeater's frequency requires the authorization of Industry Canada
C Changing the repeater's frequency is not practical
D The repeater's output power may ruin your station's receiver

B-002-003-009

Which sideband is commonly used for 20-metre phone operation?

A Lower
B FM
C Double
D Upper

B-002-003-010

Which sideband is commonly used on 3755 kHz for phone operation?

A Upper
B Lower
C FM
D Double

B-002-003-011

What is the best method to tell if a band is "open" for communication with a particular distant location?

A Ask others on your local 2 metre FM repeater
B Telephone an experienced local amateur
C Look at the propagation forecasts in an amateur radio magazine
D Listen for signals from that area from an amateur beacon station or a foreign broadcast or television station on a nearby frequency

B-002-004-001

What should you do before you transmit on any frequency?

A Check your antenna for resonance at the selected frequency
B Make sure the SWR on your antenna transmission line is high enough
C Listen to make sure that someone will be able to hear you
D Listen to make sure others are not using the frequency

B-002-004-002

If you contact another station and your signal is extremely strong and perfectly readable, what adjustment should you make to your transmitter?

A Continue with your contact, making no changes
B Turn down your power output to the minimum necessary
C Turn on your speech processor
D Reduce your SWR

B-002-004-003

What is one way to shorten transmitter tune-up time on the air to cut down on interference?

A Use twin lead instead of coaxial cable transmission lines
B Tune the transmitter into a dummy load
C Use a long wire antenna
D Tune up on 40 metres first, then switch to the desired band

B-002-004-004

How can on-the-air interference be minimized during a lengthy transmitter testing or tuning procedure?

A Use a dummy load
B Choose an unoccupied frequency
C Use a non-resonant antenna
D Use a resonant antenna that requires no loading-up procedure

B-002-004-005

Why would you use a dummy load?

A To reduce output power
B To test or adjust your transceiver without causing interference
C To give comparative signal reports
D It is faster to tune

B-002-004-006

If you are the net control station of a daily HF net, what should you do if the frequency on which you normally meet is in use just before the net begins?

A Cancel the net for that day
B Call and ask occupants to relinquish the frequency for the scheduled net operations, but if they are not agreeable, conduct the net on a frequency 3 to 5 kHz away from the regular net frequency
C Reduce your output power and start the net as usual
D Increase your power output so that net participants will be able to hear you over the existing activity

B-002-004-007

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

A Transmit as long as possible on the frequency so that no other stations may use it
B Turn off your radio
C As a courtesy to the net, move to a different frequency
D Increase your power output to ensure that all net participants can hear you

B-002-004-008

If propagation changes during your contact and you notice increasing interference from other activity on the same frequency, what should you do?

A Tell the interfering stations to change frequency, since you were there first
B Report the interference to your local Amateur Auxiliary Coordinator
C Increase the output power of your transmitter to overcome the interference
D Move your contact to another frequency

B-002-004-009

When selecting a single-sideband phone transmitting frequency, what minimum frequency separation from a contact in progress should you allow (between suppressed carriers) to minimize interference?

A 150 to 500 Hz
B Approximately 6 kHz
C Approximately 10 kHz
D Approximately 3 kHz

B-002-004-010

What is a band plan?

A A plan of operating schedules within an amateur band published by Industry Canada
B A plan devised by a club to best use a frequency band during a contest
C A guideline for deviating from amateur frequency band allocations
D A guideline for using different operating modes within an amateur band

B-002-004-011

Before transmitting, the first thing you should do is:

A ask if the frequency is occupied
B make an announcement on the frequency indicating that you intend to make a call
C decrease your receiver's volume
D listen carefully so as not to interrupt communications already in progress

B-002-005-001

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

A Send the letters "CQ" three times, followed by "DE", followed by your call sign sent once
B Send the letters "CQ" ten times, followed by "DE", followed by your call sign sent once
C Send the letters "CQ" over and over
D Send the letters "CQ" three times, followed by "DE", followed by your call sign sent three times

B-002-005-002

How should you answer a routine Morse code "CQ" call?

A Send your call sign followed by your name, station location and a signal report
B Send the other station's call sign twice, followed by "DE", followed by your call sign twice
C Send your call sign four times
D Send the other station's call sign once, followed by "DE", followed by your call sign four times

B-002-005-003

At what speed should a Morse code "CQ" call be transmitted?

A At any speed which you can reliably receive
B At any speed below 5 w.p.m.
C At the highest speed your keyer will operate
D At the highest speed at which you can control the keyer

B-002-005-004

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

A Call on the quarter hour
B An antenna is being tested
C Only the station "CQ" should answer
D Calling any station

B-002-005-005

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

A From
B Received all correctly
C Calling any station
D Directional Emissions

B-002-005-006

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

A All received correctly
B Any station please reply
C End of message
D Called station only transmit

B-002-005-007

What is meant by the term "DX"?

A Calling any station
B Go ahead
C Best regards
D Distant station

B-002-005-008

What is the meaning of the term "73"?

A Love and kisses
B Go ahead
C Best regards
D Long distance

B-002-005-009

Which of the following describes full break-in telegraphy (QSK)?

A Incoming signals are received between transmitted Morse code dots and dashes
B Automatic keyers are used to send Morse code instead of hand keys
C An operator must activate a manual send/receive switch before and after every transmission
D Breaking stations send the Morse code prosign "BK"

B-002-005-010

When selecting a CW transmitting frequency, what minimum frequency separation from a contact in progress should you allow to minimize interference?

A 1 to 3 kHz
B 3 to 6 kHz
C 150 to 500 Hz
D 5 to 50 Hz

B-002-005-011

Good Morse telegraphy operators:

A save time by leaving out spaces between words
B tune the transmitter using the operating antenna
C listen to the frequency to make sure that it is not in use before transmitting
D always give stations a good readability report

B-002-006-001

What are "RST" signal reports?

A A short way to describe signal reception
B A short way to describe transmitter power
C A short way to describe sunspot activity
D A short way to describe ionospheric conditions

B-002-006-002

What does "RST" mean in a signal report?

A Recovery, signal strength, tempo
B Recovery, signal speed, tone
C Readability, signal speed, tempo
D Readability, signal strength, tone

B-002-006-003

What is the meaning of: "Your signal report is 5 7"?

A Your signal is perfectly readable and moderately strong
B Your signal is readable with considerable difficulty
C Your signal is perfectly readable with near pure tone
D Your signal is perfectly readable, but weak

B-002-006-004

What is the meaning of: "Your signal report is 3 3 "?

A Your signal is readable with considerable difficulty and weak in strength
B Your signal is unreadable, very weak in strength
C The station is located at latitude 33 degrees
D The contact is serial number 33

B-002-006-005

What is the meaning of: "You are 5 9 plus 20 dB"?

A Your signal strength has increased by a factor of 100
B You are perfectly readable with a signal strength 20 decibels greater than S 9
C The bandwidth of your signal is 20 decibels above linearity
D Repeat your transmission on a frequency 20 kHz higher

B-002-006-006

A distant station asks for a signal report on a local repeater you monitor. Which fact affects your assessment?

A You need to listen to the repeater input frequency for an accurate signal report
B Signal reports are only useful on simplex communications
C The other operator needs to know how well he is received at the repeater, not how well you receive the repeater
D The repeater gain affects your S-meter reading

B-002-006-007

If the power output of a transmitter is increased by four times, how might a nearby receiver's S-meter reading change?

A Decrease by approximately four S units
B Decrease by approximately one S unit
C Increase by approximately one S unit
D Increase by approximately four S units

B-002-006-008

By how many times must the power output of a transmitter be increased to raise the S-meter reading on a nearby receiver from S8 to S9?

A Approximately 4 times
B Approximately 5 times
C Approximately 3 times
D Approximately 2 times

B-002-006-009

What does "RST 579" mean in a Morse code contact?

A Your signal is barely readable, moderately strong, and with faint ripple
B Your signal is perfectly readable, moderately strong, and with perfect tone
C Your signal is perfectly readable, weak strength, and with perfect tone
D Your signal is fairly readable, fair strength, and with perfect tone

B-002-006-010

What does "RST 459" mean in a Morse code contact?

A Your signal is moderately readable, very weak, and with hum on the tone
B Your signal is quite readable, fair strength, and with perfect tone
C Your signal is very readable, very strong, and with perfect tone
D Your signal is barely readable, very weak, and with perfect tone

B-002-006-011

What is the meaning of "Your signal report is 1 1"?

A Your signal is first class in readability and first class in strength
B Your signal is very readable and very strong
C Your signal is unreadable, and barely perceptible
D Your signal is 11 dB over S9

B-002-007-001

What is the meaning of the Q signal "QRS"?

A Send "RST" report
B Radio station location is:
C Send more slowly
D Interference from static

B-002-007-002

What is one meaning of the Q signal "QTH"?

A Stop sending
B My name is
C Time here is
D My location is

B-002-007-003

What is the proper Q signal to use to see if a frequency is in use before transmitting on CW?

A QRU?
B QRZ?
C QRL?
D QRV?

B-002-007-004

What is one meaning of the Q signal "QSY"?

A Change frequency
B Use more power
C Send faster
D Send more slowly

B-002-007-005

What is the meaning of the Q signal "QSB"?

A I am busy
B I have no message
C A contact is confirmed
D Your signal is fading

B-002-007-006

What is the proper Q signal to ask who is calling you on CW?

A QSL?
B QRL?
C QRT?
D QRZ?

B-002-007-007

The signal "QRM" signifies:

A is my transmission being interfered with
B I am being interfered with
C I am troubled by static
D your signals are fading

B-002-007-008

The signal "QRN" means:

A I am troubled by static
B I am busy
C are you troubled by static
D I am being interfered with

B-002-007-009

The "Q signal" indicating that you want the other station to send slower is:

A QRN
B QRS
C QRM
D QRL

B-002-007-010

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

A QRP?
B QRM?
C QRZ?
D QRK?

B-002-007-011

The "Q signal" which signifies "I will call you again" is:

A QRS
B QRT
C QRX
D QRZ

B-002-008-001

When may you use your amateur station to transmit an "SOS" or "MAYDAY"?

A Never
B Only at specific times (at 15 and 30 minutes after the hour)
C Only in case of a severe weather watch
D In a life-threatening distress situation

B-002-008-002

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

A Tell the calling station that the frequency is in use
B Direct the calling station to the nearest emergency net frequency
C Call your local police station and inform them of the emergency call
D Immediately stop your contact and acknowledge the emergency call

B-002-008-003

What is the proper distress call to use when operating phone?

A Say "EMERGENCY" several times
B Say "HELP" several times
C Say "MAYDAY" several times
D Say "SOS" several times

B-002-008-004

What is the proper distress call to use when operating CW?

A QRRR
B MAYDAY
C SOS
D CQD

B-002-008-005

What is the proper way to interrupt a repeater conversation to signal a distress call?

A Break-in immediately following the transmission of the active party and state your situation and call sign
B Say "EMERGENCY" three times
C Say "SOS," then your call sign
D Say "HELP" as many times as it takes to get someone to answer

B-002-008-006

Why is it a good idea to have a way to operate your amateur station without using commercial AC power lines?

A So you will comply with rules
B So you may operate in contests where AC power is not allowed
C So you may use your station while mobile
D So you may provide communications in an emergency

B-002-008-007

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

A Several sets of charged batteries
B An extra antenna
C A portable amplifier
D A microphone headset for hands-free operation

B-002-008-008

Which type of antenna would be a good choice as part of a portable HF amateur station that could be set up in case of an emergency?

A A three-element Yagi
B A three-element quad
C A dipole
D A parabolic dish

B-002-008-009

If you are communicating with another amateur station and hear a station in distress break in, what should you do?

A Change to a different frequency so the station in distress may have a clear channel to call for assistance
B Immediately cease all transmissions because stations in distress have emergency rights to the frequency
C Acknowledge the station in distress and determine its location and what assistance may be needed
D Continue your communication because you were on frequency first

B-002-008-010

In order of priority, a distress message comes before:

A a safety message
B an emergency message
C no other messages
D a government priority message

B-002-008-011

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

A enter the details in the log book and take no further action
B take no action
C tell all other stations to cease transmitting
D contact authorities and then maintain watch until you are certain that assistance will be forthcoming

B-002-009-001

What is a "QSL card"?

A A Notice of Violation from Industry Canada
B A postcard reminding you when your certificate will expire
C A letter or postcard from an amateur pen pal
D A written proof of communication between two amateurs

B-002-009-002

What is an azimuthal map?

A A map that shows the number of degrees longitude that an amateur satellite appears to move westward at the equator
B A map projection centered on a particular location, used to determine the shortest path between points on the Earth's surface
C A map projection centered on the North Pole
D A map that shows the angle at which an amateur satellite crosses the equator

B-002-009-003

What is the most useful type of map to use when orienting a directional HF antenna toward a distant station?

A Mercator
B Polar projection
C Topographical
D Azimuthal

B-002-009-004

A directional antenna pointed in the long-path direction to another station is generally oriented how many degrees from its short-path heading?

A 270 degrees
B 180 degrees
C 45 degrees
D 90 degrees

B-002-009-005

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

A A two-page letter containing a photograph of the operator
B A radiogram sent over the CW traffic net
C A packet message
D A signed post card listing contact date, time, frequency, mode and power, called a "QSL card"

B-002-009-006

You hear other local stations talking to radio amateurs in New Zealand but you don't hear those stations with your beam aimed on the normal compass bearing to New Zealand. What should you try?

A Point your antenna to the south
B Point your beam 180 degrees away from that bearing and listen for the stations arriving on the "long-path"
C Point your antenna toward Newington, Connecticut
D Point your antenna to the north

B-002-009-007

Which statement about recording all contacts and unanswered "CQ calls" in a station logbook or computer log is not correct?

A A log is important for handling neighbour interference complaints
B A logbook is required by Industry Canada
C A log is important for recording contacts for operating awards
D A well-kept log preserves your fondest amateur radio memories for years

B-002-009-008

Why would it be useful to have an azimuthal world map centred on the location of your station?

A Because it looks impressive
B Because it shows the angle at which an amateur satellite crosses the equator
C Because it shows the number of degrees longitude that an amateur satellite moves west
D Because it shows the compass bearing from your station to any place on Earth, for antenna planning and pointing

B-002-009-009

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

A Ottawa, Canada
B Newington, Connecticut
C Greenwich, England
D Geneva, Switzerland

B-002-009-010

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

A Unlimited Time Capsule
B Universal Time Coordinated (formerly Greenwich Mean Time - GMT)
C Universal Time Constant
D Unlisted Telephone Call

B-002-009-011

To set your station clock accurately to UTC, you could receive the most accurate time off the air from _____?

A CHU, WWV or WWVH
B A non-directional beacon station
C Your local television station
D Your local radio station

B-003-001-001

A low pass filter in an HF station is most effective when connected:

A midway between the transceiver and antenna
B as close as possible to the transceiver output
C as close as possible to the antenna tuner output
D as close as possible to the antenna

B-003-001-002

A low pass filter in an HF station is most effective when connected:

A as close as possible to the linear amplifier output
B as close as possible to the antenna
C as close as possible to the antenna tuner output
D as close as possible to the linear amplifier input

B-003-001-003

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

A Dummy load
B Antenna switch
C SWR bridge
D Low pass filter

B-003-001-004

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

A Antenna switch
B Linear amplifier
C Dummy load
D SWR bridge

B-003-001-005

Of the components in an HF station, which component would normally be connected closest to the antenna, antenna tuner and dummy load?

A Low pass filter
B SWR bridge
C Antenna switch
D Transceiver

B-003-001-006

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

A Antenna tuner
B Antenna switch
C Dummy load
D SWR bridge

B-003-001-007

In an HF station, which component is temporarily connected in the tuning process or for adjustments to the transmitter?

A SWR bridge
B Low pass filter
C Antenna tuner
D Dummy load

B-003-001-008

In an HF station, the antenna tuner is usually used for matching the transceiver with:

A tri-band Yagi antennas
B most antennas when operating below 14 MHz
C most antennas when operating above 14 MHz
D mono-band Yagi type antennas

B-003-001-009

In an HF Station, the antenna tuner is commonly used:

A to tune low pass filters
B with most antennas when operating below 14 MHz
C with most antennas when operating above 14 MHz
D to tune into dummy loads

B-003-002-001

In a frequency modulation transmitter, the input to the speech amplifier is connected to the:

A frequency multiplier
B microphone
C modulator
D power amplifier

B-003-002-002

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

A power amplifier
B oscillator
C speech amplifier
D modulator

B-003-002-003

In a frequency modulation transmitter, the _____is in between the speech amplifier and the oscillator.

A microphone
B frequency multiplier
C modulator
D power amplifier

B-003-002-004

In a frequency modulation transmitter, the _____is located between the modulator and the frequency multiplier.

A oscillator
B speech amplifier
C power amplifier
D microphone

B-003-002-005

In a frequency modulation transmitter, the _____ is located between the oscillator and the power amplifier.

A modulator
B frequency multiplier
C microphone
D speech amplifier

B-003-002-006

In a frequency modulation transmitter, the _____ is located between the frequency multiplier and the antenna.

A speech amplifier
B oscillator
C power amplifier
D modulator

B-003-002-007

In a frequency modulation transmitter, the power amplifier output is connected to the:

A microphone
B modulator
C antenna
D frequency multiplier

B-003-003-001

In a frequency modulation receiver, the _____is connected to the input of the radio frequency amplifier.

A mixer
B frequency discriminator
C limiter
D antenna

B-003-003-002

In a frequency modulation receiver, the _____ is in between the antenna and the mixer.

A radio frequency amplifier
B audio frequency amplifier
C local oscillator
D intermediate frequency amplifier

B-003-003-003

In a frequency modulation receiver, the output of the local oscillator is fed to the:

A radio frequency amplifier
B limiter
C antenna
D mixer

B-003-003-004

In a frequency modulation receiver, the output of the _____is connected to the mixer.

A speaker or headphones
B local oscillator
C frequency discriminator
D intermediate frequency amplifier

B-003-003-005

In a frequency modulation receiver, the_____ is in between the mixer and the intermediate frequency amplifier.

A filter
B limiter
C frequency discriminator
D radio frequency amplifier

B-003-003-006

In a frequency modulation receiver, the _____ is located between the filter and the limiter.

A radio frequency amplifier
B intermediate frequency amplifier
C local oscillator
D mixer

B-003-003-007

In a frequency modulation receiver, the_____ is in between the intermediate frequency amplifier and the frequency discriminator.

A local oscillator
B radio frequency amplifier
C limiter
D filter

B-003-003-008

In a frequency modulation receiver, the _____ is located between the limiter and the audio frequency amplifier.

A speaker or headphones
B local oscillator
C frequency discriminator
D intermediate frequency amplifier

B-003-003-009

In a frequency modulation receiver, the _____ is located between the speaker or headphones and the frequency discriminator.

A intermediate frequency amplifier
B radio frequency amplifier
C audio frequency amplifier
D limiter

B-003-003-010

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

A frequency discriminator
B limiter
C speaker or headphones
D intermediate frequency amplifier

B-003-004-001

In a CW transmitter, the output from the _____ is connected to the driver/buffer.

A telegraph key
B power supply
C master oscillator
D power amplifier

B-003-004-002

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

A driver/buffer
B power amplifier
C master oscillator
D power supply

B-003-004-003

In a CW transmitter, the_____ is between the master oscillator and the power amplifier.

A power supply
B telegraph key
C driver/buffer
D audio amplifier

B-003-004-004

In a CW transmitter, the_____ controls when RF energy is applied to the antenna.

A driver/buffer
B power amplifier
C telegraph key
D master oscillator

B-003-004-005

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

A power amplifier
B power supply
C telegraph key
D master oscillator

B-003-004-006

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

A power supply
B master oscillator
C power amplifier
D driver/buffer

B-003-005-001

In a single sideband and CW receiver, the antenna is connected to the _____ .

A intermediate frequency amplifier
B radio frequency amplifier
C product detector
D local oscillator

B-003-005-002

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

A radio frequency amplifier
B filter
C intermediate frequency amplifier
D audio frequency amplifier

B-003-005-003

In a single sideband and CW receiver, the _____ is connected to the radio frequency amplifier and the local oscillator.

A product detector
B filter
C mixer
D beat frequency oscillator

B-003-005-004

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

A local oscillator
B intermediate frequency amplifier
C beat frequency oscillator
D product detector

B-003-005-005

In a single sideband and CW receiver, the _____ is in between the mixer and intermediate frequency amplifier.

A beat frequency oscillator
B product detector
C filter
D radio frequency amplifier

B-003-005-006

In a single sideband and CW receiver, the _____ is in between the filter and product detector.

A intermediate frequency amplifier
B audio frequency amplifier
C beat frequency oscillator
D radio frequency amplifier

B-003-005-007

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

A product detector
B local oscillator
C beat frequency oscillator
D intermediate frequency amplifier

B-003-005-008

In a single sideband and CW receiver, the output of the _____ is connected to the product detector.

A radio frequency amplifier
B audio frequency amplifier
C beat frequency oscillator
D mixer

B-003-005-009

In a single sideband and CW receiver, the _____ is connected to the output of the product detector.

A audio frequency amplifier
B intermediate frequency amplifier
C local oscillator
D radio frequency amplifier

B-003-005-010

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

A beat frequency oscillator
B speaker or headphones
C mixer
D radio frequency amplifier

B-003-006-001

In a single sideband transmitter, the output of the _____ is connected to the balanced modulator.

A linear amplifier
B mixer
C radio frequency oscillator
D variable frequency oscillator

B-003-006-002

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

A mixer
B radio frequency oscillator
C balanced modulator
D microphone

B-003-006-003

In a single sideband transmitter, the _____ is in between the balanced modulator and the mixer.

A speech amplifier
B microphone
C filter
D radio frequency oscillator

B-003-006-004

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

A microphone
B radio frequency oscillator
C filter
D mixer

B-003-006-005

In a single sideband transmitter, the output of the _____ is connected to the balanced modulator.

A linear amplifier
B speech amplifier
C filter
D variable frequency oscillator

B-003-006-006

In a single sideband transmitter, the output of the variable frequency oscillator is connected to the _____.

A balanced modulator
B linear amplifier
C mixer
D antenna

B-003-006-007

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

A radio frequency oscillator
B linear amplifier
C antenna
D variable frequency oscillator

B-003-006-008

In an single sideband transmitter, the _____ is in between the mixer and the antenna.

A variable frequency oscillator
B balanced modulator
C radio frequency oscillator
D linear amplifier

B-003-006-009

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

A speech amplifier
B antenna
C filter
D variable frequency oscillator

B-003-007-001

In an amateur digital radio system, the _____interfaces with the computer.

A antenna
B power supply
C transceiver
D input/output

B-003-007-002

In an amateur digital radio system, the modem is connected to the _____.

A input/output
B computer
C amplifier
D antenna

B-003-007-003

In an amateur digital radio system, the transceiver is connected to the _____.

A input/output
B modem
C computer
D scanner

B-003-007-004

In an amateur digital radio system, the audio connections of the modem/sound card are connected to the _____.

A scanner
B antenna
C transceiver
D input/output

B-003-007-005

In an amateur digital radio system, the modem function is often performed by the computer_____ .

A keyboard
B scanner
C serial port
D sound card

B-003-008-001

In a regulated power supply, the transformer connects to an external source which is referred to as _____.

A input
B regulator
C filter
D rectifier

B-003-008-002

In a regulated power supply, the _____ is between the input and the rectifier.

A output
B regulator
C filter
D transformer

B-003-008-003

In a regulated power supply, the _____ is between the transformer and the filter.

A rectifier
B input
C output
D regulator

B-003-008-004

In a regulated power supply, the output of the rectifier is connected to the _____.

A transformer
B regulator
C filter
D output

B-003-008-005

In a regulated power supply, the output of the filter connects to the _____.

A rectifier
B output
C regulator
D transformer

B-003-008-006

In a regulated power supply, the _____is connected to the regulator.

A rectifier
B input
C transformer
D output

B-003-009-001

In a Yagi 3 element directional antenna, the _____ is primarily for mechanical support purposes.

A driven element
B director
C boom
D reflector

B-003-009-002

In a Yagi 3 element directional antenna, the _____ is the longest radiating element.

A reflector
B director
C driven element
D boom

B-003-009-003

In a Yagi 3 element directional antenna, the _____ is the shortest radiating element.

A boom
B reflector
C driven element
D director

B-003-009-004

In a Yagi 3 element directional antenna, the _____is not the longest nor the shortest radiating element.

A boom
B director
C reflector
D driven element

B-003-010-001

Which list of emission types is in order from the narrowest bandwidth to the widest bandwidth?

A RTTY, CW, SSB voice, FM voice
B CW, RTTY, SSB voice, FM voice
C CW, SSB voice, RTTY, FM voice
D CW, FM voice, RTTY, SSB voice

B-003-010-002

The figure in a receiver's specifications which indicates its sensitivity is the:

A RF input signal needed to achieve a given signal plus noise to noise ratio
B audio output in watts
C bandwidth of the IF in kilohertz
D number of RF amplifiers

B-003-010-003

If two receivers of different sensitivity are compared, the less sensitive receiver will produce:

A a steady oscillator drift
B more than one signal
C more signal or less noise
D less signal or more noise

B-003-010-004

Which of the following modes of transmission is usually detected with a product detector?

A Frequency modulation
B Pulse modulation
C Single sideband suppressed carrier
D Double sideband full carrier

B-003-010-005

A receiver designed for SSB reception must have a BFO (beat frequency oscillator) because:

A it phases out the unwanted sideband signal
B the suppressed carrier must be replaced for detection
C it beats with the received carrier to produce the other sideband
D it reduces the passband of the IF stages

B-003-010-006

A receiver receives an incoming signal of 3.54 MHz, and the local oscillator produces a signal of 3.995 MHz. To which frequency should the IF be tuned?

A 7.435 MHz
B 3.995 MHz
C 3.54 MHz
D 455 kHz

B-003-010-007

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

A A band pass filter
B An all pass filter
C A pi-network filter
D A notch filter

B-003-010-008

The three main parameters against which the quality of a receiver is measured are:

A selectivity, stability and frequency range
B sensitivity, stability and cross-modulation
C sensitivity, selectivity and image rejection
D sensitivity, selectivity and stability

B-003-010-009

A communications receiver has four filters installed in it, respectively designated as 250 Hz, 500 Hz, 2.4 kHz, and 6 kHz. If you were listening to single sideband, which filter would you utilize?

A 500 Hz
B 2.4 kHz
C 250 Hz
D 6 kHz

B-003-010-010

A communications receiver has four filters installed in it, respectively designated as 250 Hz, 500 Hz, 2.4 kHz and 6 kHz. You are copying a CW transmission and there is a great deal of interference. Which one of the filters would you choose?

A 6 kHz
B 250 Hz
C 500 Hz
D 2.4 kHz

B-003-010-011

Selectivity can be placed in the audio stages of a receiver by the utilization of RC active or passive audio filters. If you were to copy CW, which of the following bandpasses would you choose?

A 300 - 2700 Hz
B 100 - 1100 Hz
C 750 - 850 Hz
D 2100 - 2300 Hz

B-003-011-001

What does chirp mean?

A A small change in a transmitter's frequency each time it is keyed
B A high-pitched tone which is received along with a CW signal
C A slow change in transmitter frequency as the circuit warms up
D An overload in a receiver's audio circuit whenever CW is received

B-003-011-002

What can be done to keep a CW transmitter from chirping?

A Add a low pass filter
B Keep the power supply voltages very steady under transmit load
C Add a key-click filter
D Keep the power supply current very steady under transmit load

B-003-011-003

What circuit has a variable-frequency oscillator connected to a buffer/driver and a power amplifier?

A A digital radio transmitter
B A VFO-controlled CW transmitter
C A crystal-controlled AM transmitter
D A single-sideband transmitter

B-003-011-004

What type of modulation system changes the amplitude of an RF wave for the purpose of conveying information?

A Phase modulation
B Amplitude-rectification modulation
C Frequency modulation
D Amplitude modulation

B-003-011-005

In what emission type does the instantaneous amplitude (envelope) of the RF signal vary in accordance with the modulating audio?

A Frequency shift keying
B Amplitude modulation
C Frequency modulation
D Pulse modulation

B-003-011-006

Morse code is usually transmitted by radio as:

A an interrupted carrier
B a series of key-clicks
C a continuous carrier
D a voice-modulated carrier

B-003-011-007

A mismatched antenna or transmission line may present an incorrect load to the transmitter. The result may be:

A loss of modulation in the transmitted signal
B the driver stage will not deliver power to the final
C the output tank circuit breaks down
D full power will not be transferred to the antenna

B-003-011-008

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

A smaller DC current drain
B lower modulation percentage
C radiated key-clicks
D reduced antenna radiation

B-003-011-009

An RF oscillator should be electrically and mechanically stable. This is to ensure that the oscillator does not:

A drift in frequency
B become over modulated
C generate key-clicks
D cause undue distortion

B-003-011-010

The input power to the final stage of your transmitter is 200 watts and the output is 125 watts. What has happened to the remaining power?

A It has been used to provide negative feedback
B It has been used to provide positive feedback
C It has been dissipated as heat loss
D It has been used to provide greater efficiency

B-003-011-011

The difference between DC input power and RF output power of a transmitter RF amplifier:

A is lost in the transmission line
B is due to oscillating
C radiates from the antenna
D appears as heat dissipation

B-003-012-001

What may happen if an SSB transmitter is operated with the microphone gain set too high?

A It may cause digital interference to computer equipment
B It may cause splatter interference to other stations operating near its frequency
C It may cause interference to other stations operating on a higher frequency band
D It may cause atmospheric interference in the air around the antenna

B-003-012-002

What may happen if an SSB transmitter is operated with too much speech processing?

A It may cause interference to other stations operating on a higher frequency band
B It may cause audio distortion or splatter interference to other stations operating near its frequency
C It may cause digital interference to computer equipment
D It may cause atmospheric interference in the air around the antenna

B-003-012-003

What is the term for the average power supplied to an antenna transmission line during one RF cycle, at the crest of the modulation envelope?

A Peak transmitter power
B Peak envelope power
C Peak output power
D Average radio-frequency power

B-003-012-004

What is the usual bandwidth of a single-sideband amateur signal?

A 1 kHz
B 2 kHz
C Between 3 and 6 kHz
D Between 2 and 3 kHz

B-003-012-005

In a typical single-sideband phone transmitter, what circuit processes signals from the balanced modulator and sends signals to the mixer?

A Filter
B IF amplifier
C RF amplifier
D Carrier oscillator

B-003-012-006

What is one advantage of carrier suppression in a double-sideband phone transmission?

A Greater modulation percentage is obtainable with lower distortion
B Simpler equipment can be used to receive a double-sideband suppressed-carrier signal
C More power can be put into the sidebands for a given power amplifier capacity
D Only half the bandwidth is required for the same information content

B-003-012-007

What happens to the signal of an overmodulated single-sideband or double-sideband phone transmitter?

A It becomes distorted and occupies more bandwidth
B It becomes stronger with no other effects
C It occupies less bandwidth with poor high-frequency response
D It has higher fidelity and improved signal-to-noise ratio

B-003-012-008

How should the microphone gain control be adjusted on a single-sideband phone transmitter?

A For a dip in plate current
B For slight movement of the ALC meter on modulation peaks
C For full deflection of the ALC meter on modulation peaks
D For 100% frequency deviation on modulation peaks

B-003-012-009

The purpose of a balanced modulator in an SSB transmitter is to:

A make sure that the carrier and both sidebands are in phase
B suppress the carrier and pass on the two sidebands
C make sure that the carrier and both sidebands are 180 degrees out of phase
D ensure that the percentage of modulation is kept constant

B-003-012-010

In a SSB transmission, the carrier is:

A reinserted at the receiver
B transmitted with one sideband
C inserted at the transmitter
D of no use at the receiver

B-003-012-011

The automatic level control (ALC) in a SSB transmitter:

A reduces the system noise
B controls the peak audio input so that the power amplifier is not overdriven
C reduces transmitter audio feedback
D increases the occupied bandwidth

B-003-013-001

What may happen if an FM transmitter is operated with the microphone gain or deviation control set too high?

A It may cause interference to other stations operating on a higher frequency band
B It may cause interference to other stations operating near its frequency
C It may cause digital interference to computer equipment
D It may cause atmospheric interference in the air around the antenna

B-003-013-002

What may your FM hand-held or mobile transceiver do if you shout into its microphone and the deviation adjustment is set too high?

A It may cause digital interference to computer equipment
B It may cause atmospheric interference in the air around the antenna
C It may cause interference to other stations operating on a higher frequency band
D It may cause interference to other stations operating near its frequency

B-003-013-003

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

A Change to a higher power level
B Talk farther away from the microphone
C Talk louder into the microphone
D Let the transceiver cool off

B-003-013-004

What kind of emission would your FM transmitter produce if its microphone failed to work?

A An unmodulated carrier
B A frequency-modulated carrier
C An amplitude-modulated carrier
D A phase-modulated carrier

B-003-013-005

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

A The carrier is not detectable
B It is more resistant to distortion caused by reflected signals
C Its RF carrier stays on frequency better than the AM modes
D It provides good signal plus noise to noise ratio at low RF signal levels

B-003-013-006

What is the usual bandwidth of a frequency-modulated amateur signal for +/- 5kHz deviation?

A Between 10 and 20 kHz
B Less than 5 kHz
C Between 5 and 10 kHz
D Greater than 20 kHz

B-003-013-007

What is the result of overdeviation in an FM transmitter?

A Out-of-channel emissions
B Increased transmitter power
C Increased transmitter range
D Poor carrier suppression

B-003-013-008

What emission is produced by a reactance modulator connected to an RF power amplifier?

A Multiplex modulation
B Amplitude modulation
C Pulse modulation
D Phase modulation

B-003-013-009

Why isn't frequency modulated (FM) phone used below 28.0 MHz?

A The bandwidth would exceed limits in the Regulations
B The transmitter efficiency for this mode is low
C Harmonics could not be attenuated to practical levels
D The frequency stability would not be adequate

B-003-013-010

You are transmitting FM on the 2 metre band. Several stations advise you that your transmission is loud and distorted. A quick check with a frequency counter tells you that the transmitter is on the proper frequency. Which of the following is the most probable cause of the distortion?

A The frequency counter is giving an incorrect reading and you are indeed off frequency
B The frequency deviation of your transmitter is set too high
C The power supply output voltage is low
D The repeater is reversing your sidebands

B-003-013-011

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

A attach effect
B interference effect
C surrender effect
D capture effect

B-003-014-001

What do many amateurs use to help form good Morse code characters?

A An electronic keyer
B A key-operated on/off switch
C A notch filter
D A DTMF keypad

B-003-014-002

Where would you connect a microphone for voice operation?

A To a transceiver
B To a power supply
C To an antenna switch
D To an antenna

B-003-014-003

What would you connect to a transceiver for voice operation?

A A microphone
B A receiver audio filter
C A terminal-voice controller
D A splatter filter

B-003-014-004

Why might a dummy antenna get warm when in use?

A Because it stores radio waves
B Because it stores electric current
C Because it changes RF energy into heat
D Because it absorbs static electricity

B-003-014-005

What is the circuit called which causes a transmitter to automatically transmit when an operator speaks into its microphone?

A VOX
B VXO
C VCO
D VFO

B-003-014-006

What is the reason for using a properly adjusted speech processor with a single-sideband phone transmitter?

A It improves signal intelligibility at the receiver
B It reduces average transmitter power requirements
C It reduces unwanted noise pickup from the microphone
D It improves voice frequency fidelity

B-003-014-007

If a single-sideband phone transmitter is 100% modulated, what will a speech processor do to the transmitter's power?

A It will increase the output PEP
B It will decrease the peak power output
C It will decrease the average power output
D It will add nothing to the output Peak Envelope Power (PEP)

B-003-014-008

When switching from receive to transmit:

A the receiver should be muted
B the transmit oscillator should be turned off
C the receiving antenna should be connected
D the power supply should be off

B-003-014-009

A switching system to enable the use of one antenna for a transmitter and receiver should also:

A disconnect the antenna tuner
B disable the unit not being used
C ground the antenna on receive
D switch between meters

B-003-014-010

An antenna changeover switch in a transmitter-receiver combination is necessary:

A so that one antenna can be used for transmitter and receiver
B to change antennas for operation on other frequencies
C to prevent RF currents entering the receiver circuits
D to allow more than one transmitter to be used

B-003-014-011

Which of the following components could be used as a dynamic microphone?

A Resistor
B Capacitor
C Loudspeaker
D Crystal earpiece

B-003-015-001

What does "connected" mean in an AX.25 packet-radio link?

A A transmitting station is sending data to only one receiving station, it replies that the data is being received correctly
B A telephone link is working between two stations
C A message has reached an amateur station for local delivery
D A transmitting and receiving station are using a digipeater, so no other contacts can take place until they are finished

B-003-015-002

What does "monitoring" mean on a packet-radio frequency?

A A receiving station is displaying all messages sent to it, and replying that the messages are being received correctly
B Industry Canada is monitoring all messages
C A receiving station is displaying messages that may not be sent to it, and is not replying to any message
D A member of the Amateur Auxiliary is copying all messages

B-003-015-003

What is a digipeater?

A A station that retransmits any data that it receives
B A station that retransmits only data that is marked to be retransmitted
C A repeater built using only digital electronics parts
D A repeater that changes audio signals to digital data

B-003-015-004

What does "network" mean in packet radio?

A A way of connecting terminal-node controllers by telephone so data can be sent over long distances
B The connections on terminal-node controllers
C The programming in a terminal-node controller that rejects other callers if a station is already connected
D A way of connecting packet-radio stations so data can be sent over long distances

B-003-015-005

In AX.25 packet-radio operation, what equipment connects to a terminal-node controller?

A A DTMF microphone, a monitor and a transceiver
B A transceiver, a computer and possibly a GPS receiver
C A transceiver and a modem
D A DTMF keypad, a monitor and a transceiver

B-003-015-006

How would you modulate a 2 meter FM transceiver to produce packet-radio emissions?

A Connect a keyboard to the transceiver's microphone input
B Connect a DTMF key pad to the transceiver's microphone input
C Connect a terminal-node controller to the transceiver's microphone input
D Connect a terminal-node controller to interrupt the transceiver's carrier wave

B-003-015-007

When selecting a RTTY transmitting frequency, what minimum frequency separation from a contact in progress should you allow (center to center) to minimize interference?

A Approximately 6 kHz
B Approximately 3 kHz
C 60 Hz
D 250 to 500 Hz

B-003-015-008

Digital transmissions use signals called _____ to transmit the states 1 and 0:

A mark and space
B packet and AMTOR
C Baudot and ASCII
D dot and dash

B-003-015-009

Which of the following terms does not apply to packet radio?

A Baudot
B ASCII
C Automatic Packet Reporting System (APRS)
D AX.25

B-003-015-010

When using AMTOR transmissions, there are two modes that may be utilized. Mode A uses Automatic Repeat Request (ARQ) protocol and is normally used:

A at all times. Mode B is for test purposes only
B only when communications have been completed
C when making a general call
D for communications after contact has been established

B-003-015-011

With a digital communication mode based on a computer sound card, what is the result of feeding too much audio in the transceiver?

A Higher signal-to-noise ratio
B Lower error rate
C Power amplifier overheating
D Splatter or out-of-channel emissions

B-003-016-001

How much voltage does a standard automobile battery usually supply?

A About 240 volts
B About 120 volts
C About 9 volts
D About 12 volts

B-003-016-002

Which component has a positive and a negative side?

A A battery
B A potentiometer
C A fuse
D A resistor

B-003-016-003

A cell, that can be repeatedly recharged by supplying it with electrical energy, is known as a:

A storage cell
B low leakage cell
C memory cell
D primary cell

B-003-016-004

Which of the following is a source of electromotive force (EMF)?

A carbon resistor
B lithium-ion battery
C germanium diode
D P channel FET

B-003-016-005

An important difference between a conventional flashlight battery and a lead acid battery is that only the lead acid battery:

A has two terminals
B can be completely discharged
C contains an electrolyte
D can be repeatedly recharged

B-003-016-006

An alkaline cell has a nominal voltage of 1.5 volts. When supplying a great deal of current, the voltage may drop to 1.2 volts. This is caused by the cell's:

A current capacity
B voltage capacity
C internal resistance
D electrolyte becoming dry

B-003-016-007

An inexpensive primary cell in use today is the carbon-zinc or flashlight cell. This type of cell can be recharged:

A once
B never
C twice
D many times

B-003-016-008

Battery capacity is commonly stated as a value of current delivered over a specified period of time. What is the effect of exceeding that specified current?

A The battery will accept the subsequent charge in shorter time
B The voltage delivered will be higher
C A battery charge will not last as long
D The internal resistance of the cell is short-circuited

B-003-016-009

To increase the current capacity of a cell, several cells should be connected in:

A parallel resonant
B series resonant
C parallel
D series

B-003-016-010

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

A series
B parallel
C series-parallel
D resonance

B-003-016-011

A lithium-ion battery should never be:

A left disconnected
B left overnight at room temperature
C short-circuited
D recharged

B-003-017-001

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

A The microphone
B The SWR meter
C The power supply
D The speaker

B-003-017-002

What device converts household current to 12 volts DC?

A A catalytic converter
B A power supply
C A low pass filter
D An RS-232 interface

B-003-017-003

Which of these usually needs a high current capacity power supply?

A An antenna switch
B A receiver
C An SWR meter
D A transceiver

B-003-017-004

What may cause a buzzing or hum in the signal of an AC-powered transmitter?

A Using an antenna which is the wrong length
B Energy from another transmitter
C Bad design of the transmitter's RF power output circuit
D A bad filter capacitor in the transmitter's power supply

B-003-017-005

A power supply is to supply DC at 12 volts at 5 amperes. The power transformer should be rated higher than:

A 17 watts
B 2.4 watts
C 6 watts
D 60 watts

B-003-017-006

The diode is an important part of a simple power supply. It converts AC to DC, since it:

A allows electrons to flow in only one direction from cathode to anode
B has a high resistance to AC but not to DC
C has a high resistance to DC but not to AC
D allows electrons to flow in only one direction from anode to cathode

B-003-017-007

To convert AC to pulsating DC, you could use a:

A transformer
B capacitor
C resistor
D diode

B-003-017-008

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

A 120 and 240 volts
B 110 and 220 volts
C 100 and 200 volts
D 130 and 260 volts

B-003-017-009

Your mobile HF transceiver draws 22 amperes on transmit. The manufacturer suggests limiting voltage drop to 0.5 volt and the vehicle battery is 3 metres (10 feet) away. Given the losses below at that current, which minimum wire gauge must you use?

A Number 10, 0.07 V per metre (0.02 V per foot)
B Number 14, 0.19 V per metre (0.06 V per foot)
C Number 12, 0.11 V per metre (0.03 V per foot)
D Number 8, 0.05 V per metre (0.01 V per foot)

B-003-017-010

Why are fuses needed as close as possible to the vehicle battery when wiring a transceiver directly to the battery?

A To prevent an overcurrent situation from starting a fire
B To prevent interference to the vehicle's electronic systems
C To reduce the voltage drop in the radio's DC supply
D To protect the radio from transient voltages

B-003-017-011

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?

A The power supply
B The variable-frequency oscillator
C The driver circuit
D The power amplifier circuit

B-003-018-001

How could you best keep unauthorized persons from using your amateur station at home?

A Use a key-operated on/off switch in the main power line
B Use a carrier-operated relay in the main power line
C Put a "Danger - High Voltage" sign in the station
D Put fuses in the main power line

B-003-018-002

How could you best keep unauthorized persons from using a mobile amateur station in your car?

A Tune the radio to an unused frequency when you are done using it
B Turn the radio off when you are not using it
C Put a "Do not touch" sign on the radio
D Disconnect the microphone when you are not using it

B-003-018-003

Why would you use a key-operated on/off switch in the main power line of your station?

A To keep the power company from turning off your electricity during an emergency
B For safety, to turn off the station in the event of an emergency
C To keep unauthorized persons from using your station
D For safety, in case the main fuses fail

B-003-018-004

Why would there be a switch in a high-voltage power supply to turn off the power if its cabinet is opened?

A To keep dangerous RF radiation from coming in through an open cabinet
B To turn the power supply off when it is not being used
C To keep anyone opening the cabinet from getting shocked by dangerous high voltages
D To keep dangerous RF radiation from leaking out through an open cabinet

B-003-018-005

How little electrical current flowing through the human body can be fatal?

A Current flow through the human body is never fatal
B As little as 20 milliamperes
C Approximately 10 amperes
D More than 20 amperes

B-003-018-006

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

A The lungs
B The heart
C The brain
D The liver

B-003-018-007

What is the minimum voltage which is usually dangerous to humans?

A 2000 volts
B 30 volts
C 100 volts
D 1000 volts

B-003-018-008

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

A Run from the area so you won't be burned too
B Turn off the power, call for emergency help and provide first-aid if needed
C Wait for a few minutes to see if the person can get away from the high voltage on their own, then try to help
D Immediately drag the person away from the high voltage

B-003-018-009

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

A Wrap the person in a blanket and pull him to a safe area
B Call an electrician
C Remove the person by pulling an arm or a leg
D Turn off the high voltage switch before removing the person from contact with the source

B-003-018-010

Before checking a fault in a mains operated power supply unit, it would be safest to first:

A turn off the power and remove power plug
B short out leads of filter capacitor
C check action of capacitor bleeder resistance
D remove and check fuse from power supply

B-003-018-011

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:

A blowing the fuse
B electric shock
C damaging the transmitter
D overmodulation

B-003-019-001

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

A All station equipment
B The antenna transmission line
C The AC power line
D The power supply primary

B-003-019-002

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

A a metallic natural gas pipe
B a metallic cold water pipe
C a plastic cold water pipe
D a window screen

B-003-019-003

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

A insulated shock mounts
B the antenna
C a good ground connection
D a dummy load

B-003-019-004

Which of these materials is best for a ground rod driven into the earth?

A Fiberglass
B Copper-clad steel
C Hard plastic
D Iron or steel

B-003-019-005

If you ground your station equipment to a ground rod driven into the earth, what is the shortest length the rod should be?

A 1.2 metre (4 ft)
B 2.5 metres (8 ft)
C 3 metres (10 ft)
D The station ground system must conform to applicable electrical code requirements

B-003-019-006

Where should the green wire in a three-wire AC line cord be connected in a power supply?

A To the chassis
B To the white wire
C To the "hot" side of the power switch
D To the fuse

B-003-019-007

If your third-floor amateur station has a ground wire running 10 metres (33 feet) down to a ground rod, why might you get an RF burn if you touch the front panel of your HF transceiver?

A Because of a bad antenna connection, allowing the RF energy to take an easier path out of the transceiver through you
B Because the transceiver's heat-sensing circuit is not working to start the cooling fan
C Because the ground rod is not making good contact with moist earth
D Because the ground wire has significant reactance and acts more like an antenna than an RF ground connection

B-003-019-008

What is one good way to avoid stray RF energy in your amateur station?

A Make a couple of loops in the ground wire where it connects to your station
B Drive the ground rod at least 4m (14 feet) into the ground
C Use a beryllium ground wire for best conductivity
D Keep the station's ground wire as short as possible

B-003-019-009

Which statement about station grounding is true?

A If the chassis of all station equipment is connected with a good conductor, there is no need to tie them to an earth ground
B The chassis of each piece of station equipment should be tied together with high-impedance conductors
C RF hot spots can occur in a station located above the ground floor if the equipment is grounded by a long ground wire
D A ground loop is an effective way to ground station equipment

B-003-019-010

On mains operated power supplies, the ground wire should be connected to the metal chassis of the power supply. This ensures, in case there is a fault in the power supply, that the chassis:

A does not become conductive to prevent electric shock
B becomes conductive to prevent electric shock
C develops a high voltage compared to the ground
D does not develop a high voltage with respect to the ground

B-003-019-011

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

A prevent the plug from being reversed in the wall outlet
B prevent internal short circuits
C make it inconvenient to use
D prevent the chassis from becoming live

B-003-020-001

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

A To help protect the station equipment and building from lightning damage
B To lock the antenna system in one position
C To avoid radio frequency interference
D To make sure everything will stay in place

B-003-020-002

You want to install a lightning arrestor on your antenna transmission line, where should it be inserted?

A Behind the transceiver
B Anywhere on the line
C Outside, as close to earth grounding as possible
D Close to the antenna

B-003-020-003

How can amateur station equipment best be protected from lightning damage?

A Disconnect all equipment from the power lines and antenna cables
B Use heavy insulation on the wiring
C Never turn off the equipment
D Disconnect the ground system from all radios

B-003-020-004

What equipment should be worn for working on an antenna tower?

A A flashing red, yellow or white light
B A grounding chain
C Approved equipment in accordance with applicable standards concerning fall protection
D A reflective vest of approved colour

B-003-020-005

Why should you wear approved fall arrest equipment if you are working on an antenna tower?

A To safely bring any tools you might use up and down the tower
B To keep the tower from becoming unbalanced while you are working
C To safely hold your tools so they don't fall and injure someone on the ground
D To prevent you from accidentally falling

B-003-020-006

For safety, how high should you place a horizontal wire antenna?

A Just high enough so you can easily reach it for adjustments or repairs
B As close to the ground as possible
C High enough so that no one can touch any part of it from the ground
D Above high-voltage electrical lines

B-003-020-007

Why should you wear a hard hat if you are on the ground helping someone work on an antenna tower?

A So someone passing by will know that work is being done on the tower and will stay away
B To protect your head from something dropped from the tower
C So you won't be hurt if the tower should accidentally fall
D To keep RF energy away from your head during antenna testing

B-003-020-008

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

A Touching the antenna might cause television interference
B Touching the antenna might cause RF burns
C Touching the antenna might reflect the signal back to the transmitter and cause damage
D Touching the antenna might radiate harmonics

B-003-020-009

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

A Because contact might cause a short circuit and damage the transmitter
B Because high-voltage radio energy might burn the person
C Because contact might break the transmission line
D Because contact might cause spurious emissions

B-003-020-010

What safety precautions should you take before beginning repairs on an antenna?

A Inform your neighbours so they are aware of your intentions
B Turn off the main power switch in your house
C Be sure to turn off the transmitter and disconnect the transmission line
D Be sure you and the antenna structure are grounded

B-003-020-011

What precaution should you take when installing a ground-mounted antenna?

A It should be painted so people or animals do not accidentally run into it
B It should not be installed in a wet area
C It should not be installed higher than you can reach
D It should be installed so no one can come in contact with it

B-003-021-001

What should you do for safety when operating at UHF and microwave frequencies?

A Make sure that an RF leakage filter is installed at the antenna feed point
B Make sure the standing wave ratio is low before you conduct a test
C Never use a horizontally polarized antenna
D Keep antenna away from your eyes when RF is applied

B-003-021-002

What should you do for safety if you put up a UHF transmitting antenna?

A Make sure the antenna is near the ground to keep its RF energy pointing in the correct direction
B Make sure you connect an RF leakage filter at the antenna feed point
C Make sure that RF field screens are in place
D Make sure the antenna will be in a place where no one can get near it when you are transmitting

B-003-021-003

What should you do for safety, before removing the shielding on a UHF power amplifier?

A Make sure the antenna transmission line is properly grounded
B Make sure all RF screens are in place at the antenna transmission line
C Make sure the amplifier cannot accidentally be turned on
D Make sure that RF leakage filters are connected

B-003-021-004

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

A To keep static charges from building up
B To help the antenna radiate energy equally in all directions
C To reduce your exposure to the radio-frequency energy
D To use your body to reflect the signal in one direction

B-003-021-005

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

A Pointed down to bounce the signal off the ground
B Away from your head and away from others
C Pointed towards the station you are contacting
D Pointed away from the station you are contacting

B-003-021-006

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

A It causes hair to fall out
B It heats the tissue
C It lowers blood pressure
D It paralyzes the tissue

B-003-021-007

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

A Eyes
B Heart
C Liver
D Hands

B-003-021-008

Depending on the wavelength of the signal, the energy density of the RF field, and other factors, in what way can RF energy affect body tissue?

A It heats the tissue
B It causes ionizing radiation poisoning
C It causes blood flow to stop
D It has no effect on the body

B-003-021-009

If you operate your amateur station with indoor antennas, what precautions should you take when you install them?

A Locate the antennas as far away as possible from living spaces that will be occupied while you are operating
B Position the antennas parallel to electrical power wires to take advantage of parasitic effects
C Position the antennas along the edge of a wall where it meets the floor or ceiling to reduce parasitic radiation
D Locate the antennas close to your operating position to minimize transmission line length

B-003-021-010

Why should directional high-gain antennas be mounted higher than nearby structures?

A So they will not damage nearby structures with RF energy
B So they will receive more sky waves and fewer ground waves
C So they will not direct RF energy toward people in nearby structures
D So they will be dried by the wind after a heavy rain storm

B-003-021-011

For best RF safety, where should the ends and center of a dipole antenna be located?

A Close to the ground so simple adjustments can be easily made without climbing a ladder
B As high as possible to prevent people from coming in contact with the antenna
C Near or over moist ground so RF energy will be radiated away from the ground
D As close to the transmitter as possible so RF energy will be concentrated near the transmitter

B-004-001-001

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

A an oscillator
B a receiver
C an amplifier
D a modulator

B-004-001-002

If an amplifier becomes non-linear, the output signal would:

A be saturated
B cause oscillations
C overload the power supply
D become distorted

B-004-001-003

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

A an RF amplifier
B an RF oscillator
C an audio oscillator
D an audio amplifier

B-004-001-004

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

A an audio amplifier
B an RF oscillator
C an RF amplifier
D an audio oscillator

B-004-001-005

The range of frequencies to be amplified by a speech amplifier is typically:

A 40 to 40 000 Hz
B 300 to 3000 Hz
C 3 to 300 Hz
D 300 to 1000 Hz

B-004-001-006

Which of the following is not amplified by an amplifier?

A Voltage
B Resistance
C Current
D Power

B-004-001-007

The increase in signal level by an amplifier is called:

A gain
B attenuation
C amplitude
D modulation

B-004-001-008

A device with gain has the property of:

A modulation
B amplification
C attenuation
D oscillation

B-004-001-009

A device labelled "Gain = 10 dB" is likely to be an:

A audio fader
B amplifier
C attenuator
D oscillator

B-004-001-010

Amplifiers can amplify:

A voltage, current, or power
B current, power, or inductance
C voltage, power, or inductance
D voltage, current, or inductance

B-004-001-011

Which of the following is not a property of an amplifier?

A Distortion
B Loss
C Gain
D Linearity

B-004-002-001

Zener diodes are used as:

A current regulators
B RF detectors
C AF detectors
D voltage regulators

B-004-002-002

One important application for diodes is recovering information from transmitted signals. This is referred to as:

A regeneration
B ionization
C biasing
D demodulation

B-004-002-003

The primary purpose of a Zener diode is to:

A to boost the power supply voltage
B provide a path through which current can flow
C regulate or maintain a constant voltage
D provide a voltage phase shift

B-004-002-004

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

A transformation
B modulation
C rectification
D amplification

B-004-002-005

The electrodes of a semiconductor diode are known as:

A collector and base
B cathode and drain
C anode and cathode
D gate and source

B-004-002-006

If alternating current is applied to the anode of a diode, what would you expect to see at the cathode?

A Pulsating alternating current
B Pulsating direct current
C No signal
D Steady direct current

B-004-002-007

In a semiconductor diode, electrons flow from:

A grid to anode
B cathode to anode
C anode to cathode
D cathode to grid

B-004-002-008

What semiconductor device glows different colours, depending upon its chemical composition?

A A neon bulb
B A vacuum diode
C A light-emitting diode
D A fluorescent bulb

B-004-002-009

Voltage regulation is the principal application of the:

A Zener diode
B junction diode
C light-emitting diode
D vacuum diode

B-004-002-010

In order for a diode to conduct, it must be:

A enhanced
B reverse-biased
C forward-biased
D close coupled

B-004-003-001

Which component can amplify a small signal using low voltages?

A A variable resistor
B An electrolytic capacitor
C A multiple-cell battery
D A PNP transistor

B-004-003-002

The basic semiconductor amplifying device is the:

A P-N junction
B diode
C transistor
D tube

B-004-003-003

The three leads from a PNP transistor are named:

A collector, emitter and base
B drain, base and source
C collector, source and drain
D gate, source and drain

B-004-003-004

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:

A modulation
B rectification
C amplification
D detection

B-004-003-005

Bipolar transistors usually have:

A 3 leads
B 1 lead
C 2 leads
D 4 leads

B-004-003-006

A semiconductor is described as a "general purpose audio NPN device". This would be:

A an audio detector
B a bipolar transistor
C a silicon diode
D a triode

B-004-003-007

The two basic types of bipolar transistors are:

A P and N channel types
B NPN and PNP types
C diode and triode types
D varicap and Zener types

B-004-003-008

A transistor can be destroyed in a circuit by:

A cut-off
B excessive heat
C excessive light
D saturation

B-004-003-009

In a bipolar transistor, the _____compares closest to the control grid of a triode vacuum tube.

A collector
B base
C emitter
D source

B-004-003-010

In a bipolar transistor, the _____compares closest to the plate of a triode vacuum tube.

A base
B collector
C gate
D emitter

B-004-003-011

In a bipolar transistor, the _____ compares closest to the cathode of a triode vacuum tube.

A drain
B emitter
C collector
D base

B-004-004-001

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

A inductive and capacitive
B N and P channel
C NPN and PNP
D germanium and silicon

B-004-004-002

A semiconductor having its leads labelled gate, drain, and source is best described as a:

A gated transistor
B bipolar transistor
C silicon diode
D field-effect transistor

B-004-004-003

In a field effect transistor, the _____ is the terminal that controls the conductance of the channel.

A source
B collector
C gate
D drain

B-004-004-004

In a field effect transistor, the _____is the terminal where the charge carriers enter the channel.

A drain
B emitter
C source
D gate

B-004-004-005

In a field effect transistor, the _____ is the terminal where the charge carriers leave the channel.

A source
B gate
C drain
D collector

B-004-004-006

Which semiconductor device has characteristics most similar to a triode vacuum tube?

A Field effect transistor
B Junction diode
C Zener diode
D Bipolar transistor

B-004-004-007

The control element in the field effect transistor is the:

A drain
B base
C gate
D source

B-004-004-008

If you wish to reduce the current flowing in a field effect transistor, you could:

A increase the forward bias voltage
B increase the forward bias gain
C increase the reverse bias voltage
D decrease the reverse bias voltage

B-004-004-009

The source of a field effect transistor corresponds to the _____ of a bipolar transistor.

A collector
B emitter
C base
D drain

B-004-004-010

The drain of a field effect transistor corresponds to the _____ of a bipolar transistor.

A emitter
B collector
C base
D source

B-004-004-011

Which two elements in a field effect transistor exhibit fairly similar characteristics?

A Source and drain
B Source and gate
C Gate and drain
D Source and base

B-004-005-001

What is one reason a triode vacuum tube might be used instead of a transistor in a circuit?

A It is much smaller
B It uses lower voltages
C It may be able to handle higher power
D It uses less current

B-004-005-002

Which component can amplify a small signal but must use high voltages?

A An electrolytic capacitor
B A multiple-cell battery
C A vacuum tube
D A transistor

B-004-005-003

A feature common to triode tubes and transistors is that both:

A use heat to cause electron movement
B can amplify signals
C have electrons drifting through a vacuum
D convert electrical energy to radio waves

B-004-005-004

In a vacuum tube, the electrode that is operated with the highest positive potential is the _____.

A grid
B plate
C filament (heater)
D cathode

B-004-005-005

In a vacuum tube, the electrode that is usually a cylinder of wire mesh is the _____.

A filament (heater)
B cathode
C plate
D grid

B-004-005-006

In a vacuum tube, the element that is furthest away from the plate is the _____.

A emitter
B cathode
C filament (heater)
D grid

B-004-005-007

In a vacuum tube, the electrode that emits electrons is the _____.

A cathode
B grid
C collector
D plate

B-004-005-008

What is inside the envelope of a triode tube?

A A vacuum
B Argon
C Air
D Neon

B-004-005-009

How many grids are there in a triode vacuum tube?

A Three
B Three plus a filament
C One
D Two

B-004-006-001

How do you find a resistor's tolerance rating?

A By using a voltmeter
B By reading the resistor's colour code
C By using Thevenin's theorem for resistors
D By reading its Baudot code

B-004-006-002

What do the first three-colour bands on a resistor indicate?

A The resistance material
B The power rating in watts
C The resistance tolerance in percent
D The value of the resistor in ohms

B-004-006-003

What would the fourth colour band on a 47 ohm resistor indicate?

A The power rating in watts
B The resistance material
C The resistance tolerance in percent
D The value of the resistor in ohms

B-004-006-004

What are the possible values of a 100 ohm resistor with a 10% tolerance?

A 10 to 100 ohms
B 80 to 120 ohms
C 90 to 110 ohms
D 90 to 100 ohms

B-004-006-005

How do you find a resistor's value?

A By using the Baudot code
B By using the resistor's colour code
C By using a voltmeter
D By using Thevenin's theorem for resistors

B-004-006-006

A club project requires that a resistive voltage divider provide a very accurate and predictable ratio. Out of the list below, which resistor tolerance would you select?

A 20%
B 0.1%
C 5%
D 10%

B-004-006-007

You need a current limiting resistor for a light-emitting diode (LED). The actual resistance is not critical at all. Out of the list below, which resistor tolerance would you select?

A 0.1%
B 5%
C 10%
D 20%

B-004-006-008

If a carbon resistor's temperature is increased, what will happen to the resistance?

A It will increase by 20% for every 10 degrees centigrade
B It will change depending on the resistor's temperature coefficient rating
C It will stay the same
D It will become time dependent

B-004-006-009

A gold tolerance band on a resistor indicates the tolerance is:

A 10%
B 1%
C 5%
D 20%

B-004-006-010

Which colour band would differentiate a 120-ohm from a 1200-ohm resistor?

A Second band
B Fourth band
C Third band
D First band

B-004-006-011

Given that red=2, violet=7 and yellow=4, what is the nominal value of a resistor whose colour code reads "red", "violet" and "yellow"?

A 27 megohms
B 270 kilohms
C 274 ohms
D 72 kilohms

B-005-001-001

If a dial marked in megahertz shows a reading of 3.525 MHz, what would it show if it were marked in kilohertz?

A 35.25 kHz
B 3 525 000 kHz
C 0.003525 kHz
D 3525 kHz

B-005-001-002

If an ammeter marked in amperes is used to measure a 3000 milliampere current, what reading would it show?

A 0.3 ampere
B 3 000 000 amperes
C 3 amperes
D 0.003 ampere

B-005-001-003

If a voltmeter marked in volts is used to measure a 3500 millivolt potential, what reading would it show?

A 350 volts
B 3.5 volts
C 0.35 volt
D 35 volts

B-005-001-004

How many microfarads is 1 000 000 picofarads?

A 1 000 000 000 microfarads
B 1000 microfarads
C 0.001 microfarad
D 1 microfarad

B-005-001-005

If you have a hand-held transceiver which puts out 500 milliwatts, how many watts would this be?

A 0.5
B 5
C 50
D 0.02

B-005-001-006

A kilohm is:

A 10 ohms
B 1000 ohms
C 0.1 ohm
D 0.001 ohm

B-005-001-007

6.6 kilovolts is equal to:

A 660 volts
B 66 volts
C 66 000 volts
D 6600 volts

B-005-001-008

A current of one quarter ampere may be written as:

A 250 milliamperes
B 0.5 amperes
C 0.25 milliampere
D 250 microamperes

B-005-001-009

How many millivolts are equivalent to two volts?

A 0.002
B 2 000
C 0.000002
D 2 000 000

B-005-001-010

One megahertz is equal to:

A 0.001 Hz
B 10 Hz
C 1 000 kHz
D 100 kHz

B-005-001-011

An inductance of 10 000 microhenrys may be stated correctly as:

A 1 000 henrys
B 10 millihenrys
C 100 millihenrys
D 10 henrys

B-005-002-001

Name three good electrical conductors.

A Gold, silver, wood
B Copper, aluminum, paper
C Copper, gold, mica
D Gold, silver, aluminum

B-005-002-002

Name four good electrical insulators.

A Paper, glass, air, aluminum
B Glass, wood, copper, porcelain
C Glass, air, plastic, porcelain
D Plastic, rubber, wood, carbon

B-005-002-003

Why do resistors sometimes get hot when in use?

A Their reactance makes them heat up
B Hotter circuit components nearby heat them up
C They absorb magnetic energy which makes them hot
D Some electrical energy passing through them is lost as heat

B-005-002-004

What is the best conductor among the following materials?

A silicon
B aluminium
C copper
D carbon

B-005-002-005

Which type of material listed will most readily allow an electric current to flow?

A a conductor
B an insulator
C a semiconductor
D a dielectric

B-005-002-006

A length of metal is connected in a circuit and is found to conduct electricity very well. It would be best described as having a:

A low resistance
B high resistance
C high wattage
D low wattage

B-005-002-007

The letter "R" is the symbol for:

A impedance
B reluctance
C reactance
D resistance

B-005-002-008

The reciprocal of resistance is:

A reluctance
B permeability
C conductance
D reactance

B-005-002-009

Voltage drop means:

A the voltage which is dissipated before useful work is accomplished
B the voltage developed across the terminals of a component
C any point in a radio circuit which has zero voltage
D the difference in voltage at output terminals of a transformer

B-005-002-010

The resistance of a conductor changes with:

A humidity
B temperature
C voltage
D current

B-005-002-011

The most common material used to make a resistor is:

A carbon
B gold
C mica
D lead

B-005-003-001

What is the word used to describe the rate at which electrical energy is used?

A Power
B Current
C Voltage
D Resistance

B-005-003-002

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

A The 60 watt bulb
B The 100 watt bulb
C They will all be the same
D The 40 watt bulb

B-005-003-003

What is the basic unit of electrical power?

A The ampere
B The volt
C The ohm
D The watt

B-005-003-004

Which electrical circuit will have no current?

A An open circuit
B A short circuit
C A complete circuit
D A closed circuit

B-005-003-005

Which electrical circuit draws too much current?

A An open circuit
B A short circuit
C A dead circuit
D A closed circuit

B-005-003-006

Power is expressed in:

A volts
B amperes
C ohms
D watts

B-005-003-007

Which of the following two quantities should be multiplied together to find power?

A Resistance and capacitance
B Voltage and current
C Inductance and capacitance
D Voltage and inductance

B-005-003-008

Which two electrical units multiplied together give the unit "watts"?

A Volts and farads
B Farads and henrys
C Amperes and henrys
D Volts and amperes

B-005-003-009

A resistor in a circuit becomes very hot and starts to burn. This is because the resistor is dissipating too much:

A voltage
B resistance
C current
D power

B-005-003-010

High power resistors are usually large with heavy leads. The size aids the operation of the resistor by:

A allowing higher voltage to be handled
B increasing the effective resistance of the resistor
C making it shock proof
D allowing heat to dissipate more readily

B-005-003-011

The resistor that could dissipate the most heat would be marked:

A 2 ohms
B 0.5 watt
C 20 watts
D 100 ohms

B-005-004-001

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

A 100 volts
B 48 volts
C 52 volts
D 25 volts

B-005-004-002

How is the current in a DC circuit calculated when the voltage and resistance are known?

A Current equals voltage divided by resistance
B Current equals resistance multiplied by voltage
C Current equals resistance divided by voltage
D Current equals power divided by voltage

B-005-004-003

How is the resistance in a DC circuit calculated when the voltage and current are known?

A Resistance equals voltage divided by current
B Resistance equals current multiplied by voltage
C Resistance equals power divided by voltage
D Resistance equals current divided by voltage

B-005-004-004

How is the voltage in a DC circuit calculated when the current and resistance are known?

A Voltage equals resistance divided by current
B Voltage equals power divided by current
C Voltage equals current multiplied by resistance
D Voltage equals current divided by resistance

B-005-004-005

If a 12-volt battery supplies 0.25 ampere to a circuit, what is the circuit's resistance?

A 48 ohms
B 3 ohms
C 12 ohms
D 0.25 ohm

B-005-004-006

Calculate the value of resistance necessary to drop 100 volts with current flow of 0.8 milliamperes:

A 1.25 kilohms
B 125 kilohms
C 125 ohms
D 1250 ohms

B-005-004-007

The voltage required to force a current of 4.4 amperes through a resistance of 50 ohms is:

A 2220 volts
B 22.0 volts
C 0.220 volt
D 220 volts

B-005-004-008

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

A 0.005 ampere
B 0.2 ampere
C 2 amperes
D 0.5 ampere

B-005-004-009

What voltage would be needed to supply a current of 200 milliamperes, to operate an electric lamp which has a resistance of 25 ohms?

A 175 volts
B 225 volts
C 5 volts
D 8 volts

B-005-004-010

The resistance of a circuit can be found by using one of the following:

A R = E x I
B R = E/I
C R = I/E
D R = E/R

B-005-004-011

If a 3 volt battery supplies 300 milliamperes to a circuit, the circuit resistance is:

A 3 ohms
B 10 ohms
C 9 ohms
D 5 ohms

B-005-005-001

In a parallel circuit with a voltage source and several branch resistors, how is the total current related to the current in the branch resistors?

A It equals the sum of the branch current through each resistor
B It equals the average of the branch current through each resistor
C It decreases as more parallel resistors are added to the circuit
D It is the sum of each resistor's voltage drop multiplied by the total number of resistors

B-005-005-002

Three resistors, respectively rated at 10, 15 and 20 ohms are connected in parallel across a 6-volt battery. Which statement is true?

A The current through the 10 ohms, 15 ohms and 20 ohms separate resistances, when added together, equals the total current drawn from the battery
B The current flowing through the 10 ohm resistance is less than that flowing through the 20 ohm resistance
C The voltage drop across each resistance added together equals 6 volts
D The voltage drop across the 20 ohm resistance is greater than the voltage across the 10 ohm resistance

B-005-005-003

Total resistance in a parallel circuit:

A depends upon the voltage drop across each branch
B could be equal to the resistance of one branch
C depends upon the applied voltage
D is always less than the smallest resistance

B-005-005-004

Two resistors are connected in parallel and are connected across a 40 volt battery. If each resistor is 1000 ohms, the total current is:

A 40 amperes
B 80 milliamperes
C 40 milliamperes
D 80 amperes

B-005-005-005

The total resistance of resistors connected in series is:

A greater than the resistance of any one resistor
B less than the resistance of any one resistor
C equal to the highest resistance present
D equal to the lowest resistance present

B-005-005-006

Five 10 ohm resistors connected in series equals:

A 50 ohms
B 5 ohms
C 10 ohms
D 1 ohm

B-005-005-007

Which series combination of resistors would replace a single 120 ohm resistor?

A Two 62 ohm
B Five 100 ohm
C Five 24 ohm
D Six 22 ohm

B-005-005-008

If ten resistors of equal value were wired in parallel, the total resistance would be:

A 10 / R
B 10 x R
C 10 + R
D R / 10

B-005-005-009

The total resistance of four 68 ohm resistors wired in parallel is:

A 272 ohms
B 17 ohms
C 12 ohms
D 34 ohms

B-005-005-010

Two resistors are in parallel. Resistor A carries twice the current of resistor B, which means that:

A the voltage across B is twice that across A
B the voltage across A is twice that across B
C B has half the resistance of A
D A has half the resistance of B

B-005-005-011

The total current in a parallel circuit is equal to the:

A source voltage divided by the sum of the resistive elements
B current in any one of the parallel branches
C sum of the currents through all the parallel branches
D source voltage divided by the value of one of the resistive elements

B-005-006-001

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

A For a higher current gain
B For less impedance in the circuit
C For greater power dissipation
D For better response time

B-005-006-002

How many watts of electrical power are used by a 12 volt DC light bulb that draws 0.2 ampere?

A 60 watts
B 24 watts
C 6 watts
D 2.4 watts

B-005-006-003

The DC input power of a transmitter operating at 12 volts and drawing 500 milliamperes would be:

A 20 watts
B 500 watts
C 12 watts
D 6 watts

B-005-006-004

When two 500 ohm 1 watt resistors are connected in series, the maximum total power that can be dissipated by the resistors is:

A 1/2 watt
B 4 watts
C 2 watts
D 1 watt

B-005-006-005

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

A 2 watts
B 1/2 watt
C 1 watt
D 4 watts

B-005-006-006

If the voltage applied to two resistors in series is doubled, how much will the total power change?

A Increase four times
B Decrease to half
C Double
D No change

B-005-006-007

Which combination of resistors could make up a 50 ohms dummy load capable of safely dissipating 5 watts?

A Four 2-watt 200 ohms resistors in parallel
B Two 5-watt 100 ohms resistors in series
C Two 2-watt 25 ohms resistors in series
D Ten quarter-watt 500 ohms resistors in parallel

B-005-006-008

A 12 volt light bulb is rated at a power of 30 watts. The current drawn would be:

A 360 amperes
B 12/30 amperes
C 30/12 amperes
D 18 amperes

B-005-006-009

If two 10 ohm resistors are connected in series with a 10 volt battery, the power consumption would be:

A 20 watts
B 100 watts
C 5 watts
D 10 watts

B-005-006-010

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:

A lesser resistance and similar power rating
B the same resistance but greater power rating
C the same resistance but lesser power rating
D greater resistance and similar power rating

B-005-006-011

Resistor wattage ratings are:

A calculated according to physical size and tolerance rating
B expressed in joules
C variable in steps of one hundred
D determined by heat dissipation qualities

B-005-007-001

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

A Pulse rate
B Inductance
C Frequency
D Speed

B-005-007-002

Approximately what frequency range can most humans hear?

A 20 - 20 000 Hz
B 20 000 - 30 000 Hz
C 200 - 200 000 Hz
D 0 - 20 Hz

B-005-007-003

Why do we call signals in the range 20 Hz to 20 000 Hz audio frequencies?

A Because the human ear cannot sense anything in this range
B Because this range is too low for radio energy
C Because the human ear can sense radio waves in this range
D Because the human ear can sense sounds in this range

B-005-007-004

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

A Radio
B Audio
C Hyper
D Super-high

B-005-007-005

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

A Wave speed
B Waveform
C Wave spread
D Wavelength

B-005-007-006

What happens to a signal's wavelength as its frequency increases?

A It gets longer
B It stays the same
C It disappears
D It gets shorter

B-005-007-007

What happens to a signal's frequency as its wavelength gets longer?

A It stays the same
B It goes up
C It goes down
D It disappears

B-005-007-008

What does 60 hertz (Hz) mean?

A 6000 metres per second
B 60 metres per second
C 6000 cycles per second
D 60 cycles per second

B-005-007-009

If the frequency of the waveform is 100 Hz, the time for one cycle is:

A 10 seconds
B 0.0001 second
C 1 second
D 0.01 second

B-005-007-010

Current in an AC circuit goes through a complete cycle in 0.1 second. This means the AC has a frequency of:

A 1000 Hz
B 10 Hz
C 1 Hz
D 100 Hz

B-005-007-011

A signal is composed of a fundamental frequency of 2 kHz & another of 4 kHz. The 4 kHz signal is referred to as

A a dielectric signal of the main signal
B a harmonic of the 2 kHz signal
C a fundamental of the 2 kHz signal
D the DC component of the main signal

B-005-008-001

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

A 3 dB higher
B 6 dB higher
C 12 dB higher
D 1 dB higher

B-005-008-002

How can you decrease your transmitter's power by 3 dB?

A Divide the original power by 2
B Divide the original power by 1.5
C Divide the original power by 3
D Divide the original power by 4

B-005-008-003

How can you increase your transmitter's power by 6 dB?

A Multiply the original power by 3
B Multiply the original power by 2
C Multiply the original power by 1.5
D Multiply the original power by 4

B-005-008-004

If a signal-strength report is "10 dB over S9", what should the report be if the transmitter power is reduced from 1500 watts to 150 watts?

A S9 plus 5 dB
B S9
C S9 plus 3 dB
D S9 minus 10 dB

B-005-008-005

If a signal-strength report is "20 dB over S9", what should the report be if the transmitter power is reduced from 1500 watts to 150 watts?

A S9 plus 10 dB
B S9 plus 5 dB
C S9 plus 3 dB
D S9

B-005-008-006

The unit "decibel" is used to indicate:

A a mathematical ratio
B an oscilloscope wave form
C certain radio waves
D a single side band signal

B-005-008-007

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

A 1
B 3
C 30
D 6

B-005-008-008

The power of a transmitter is increased from 5 watts to 50 watts by a linear amplifier. The power gain, expressed in dB, is:

A 30 dB
B 40 dB
C 20 dB
D 10 dB

B-005-008-009

You add a 9 dB gain amplifier to your 2 watt handheld. What is the power output of the combination?

A 18 watts
B 16 watts
C 11 watts
D 20 watts

B-005-008-010

The power of a transmitter is increased from 2 watts to 8 watts. This is a power gain of _____ dB.

A 9 dB
B 6 dB
C 3 dB
D 8 dB

B-005-008-011

A local amateur reports your 100W 2M simplex VHF transmission as 30 dB over S9. To reduce your signal to S9, you would reduce your power to _____ watts.

A 100 mW
B 1 W
C 10 W
D 33.3 W

B-005-009-001

If two equal-value inductors are connected in series, what is their total inductance?

A The same as the value of either inductor
B The value of one inductor times the value of the other
C Twice the value of one inductor
D Half the value of one inductor

B-005-009-002

If two equal-value inductors are connected in parallel, what is their total inductance?

A Half the value of one inductor
B Twice the value of one inductor
C The same as the value of either inductor
D The value of one inductor times the value of the other

B-005-009-003

If two equal-value capacitors are connected in series, what is their total capacitance?

A The same as the value of either capacitor
B The value of one capacitor times the value of the other
C Half the value of either capacitor
D Twice the value of one capacitor

B-005-009-004

If two equal-value capacitors are connected in parallel, what is their total capacitance?

A Twice the value of one capacitor
B The same as the value of either capacitor
C The value of one capacitor times the value of the other
D Half the value of one capacitor

B-005-009-005

What determines the inductance of a coil?

A The core material, the coil diameter, the length of the coil and whether the coil is mounted horizontally or vertically
B The core material, the coil diameter, the length of the coil and the number of turns of wire used to wind the coil
C The core material, the number of turns used to wind the coil and the frequency of the current through the coil
D The coil diameter, the number of turns of wire used to wind the coil and the type of metal used for the wire

B-005-009-006

What determines the capacitance of a capacitor?

A The material between the plates, the area of one plate, the number of plates and the material used for the protective coating
B The material between the plates, the surface area of the plates, the number of plates and the spacing between the plates
C The material between the plates, the number of plates and the size of the wires connected to the plates
D The number of plates, the spacing between the plates and whether the dielectric material is N type or P type

B-005-009-007

If two equal-value capacitors are connected in parallel, what is their capacitance?

A The same value of either capacitor
B The value of one capacitor times the value of the other
C Half the value of either capacitor
D Twice the value of either capacitor

B-005-009-008

To replace a faulty 10 millihenry choke, you could use two:

A 20 millihenry chokes in series
B 30 millihenry chokes in parallel
C 5 millihenry chokes in parallel
D 5 millihenry chokes in series

B-005-009-009

Three 15 microfarad capacitors are wired in series. The total capacitance of this arrangement is:

A 12 microfarads
B 18 microfarads
C 5 microfarads
D 45 microfarads

B-005-009-010

Which series combinations of capacitors would best replace a faulty 10 microfarad capacitor?

A Two 10 microfarad capacitors
B Twenty 2 microfarad capacitors
C Ten 2 microfarad capacitors
D Two 20 microfarad capacitors

B-005-009-011

The total capacitance of two or more capacitors in series is:

A always less than the smallest capacitor
B found by adding each of the capacitors together and dividing by the total number of capacitors
C found by adding each of the capacitors together
D always greater than the largest capacitor

B-005-010-001

How does a coil react to AC?

A As the frequency of the applied AC increases, the reactance increases
B As the amplitude of the applied AC increases, the reactance decreases
C As the amplitude of the applied AC increases, the reactance increases
D As the frequency of the applied AC increases, the reactance decreases

B-005-010-002

How does a capacitor react to AC?

A As the amplitude of the applied AC increases, the reactance decreases
B As the frequency of the applied AC increases, the reactance decreases
C As the frequency of the applied AC increases, the reactance increases
D As the amplitude of the applied AC increases, the reactance increases

B-005-010-003

The reactance of capacitors increases as:

A frequency decreases
B applied voltage increases
C applied voltage decreases
D frequency increases

B-005-010-004

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:

A inductance
B capacitance
C impedance
D resonance

B-005-010-005

Capacitive reactance:

A increases with the time constant
B decreases as frequency increases
C applies only to series RLC circuits
D increases as frequency increases

B-005-010-006

Inductive reactance may be increased by:

A a decrease in the applied frequency
B a decrease in the supplied current
C an increase in the applied voltage
D an increase in the applied frequency

B-005-010-007

What property allows a coil wound on a ferrite core to mitigate the effects of an offending radio signal?

A High reactance at audio frequencies
B High reactance at radio frequencies
C Low reactance at radio frequencies
D Low reactance at audio frequencies

B-005-010-008

What property allows an RF bypass capacitor on an audio circuit to divert an offending radio signal?

A Low reactance at audio frequencies
B High reactance at audio frequencies
C Low reactance at radio frequencies
D High reactance at radio frequencies

B-005-010-009

What property allows an RF bypass capacitor to have little effect on an audio circuit?

A Low reactance at high frequencies
B High reactance at high frequencies
C Low reactance at low frequencies
D High reactance at low frequencies

B-005-010-010

What property allows an RF choke coil to have little effect on signals meant to flow through the coil?

A Low reactance at high frequencies
B High reactance at high frequencies
C Low reactance at low frequencies
D High reactance at low frequencies

B-005-010-011

In general, the reactance of inductors increases with:

A decreasing applied voltage
B increasing applied voltage
C increasing AC frequency
D decreasing AC frequency

B-005-011-001

If no load is attached to the secondary winding of a transformer, what is current in the primary winding called?

A Magnetizing current
B Direct current
C Latent current
D Stabilizing current

B-005-011-002

A transformer operates a 6.3 volt 2 ampere light bulb from its secondary winding. The input power to the primary winding is approximately:

A 6 watts
B 8 watts
C 3 watts
D 13 watts

B-005-011-003

A transformer has a 240 volt primary that draws a current of 250 milliamperes from the mains supply. Assuming no losses and only one secondary, what current would be available from the 12 volt secondary?

A 50 amperes
B 5 amperes
C 215 amperes
D 25 amperes

B-005-011-004

In a mains power transformer, the primary winding has 250 turns, and the secondary has 500. If the input voltage is 120 volts, the likely secondary voltage is:

A 480 V
B 610 V
C 26 V
D 240 V

B-005-011-005

The strength of the magnetic field around a conductor in air is:

A directly proportional to the diameter of the conductor
B inversely proportional to the voltage on the conductor
C directly proportional to the current in the conductor
D inversely proportional to the diameter of the conductor

B-005-011-006

Maximum induced voltage in a coil occurs when:

A the magnetic field around the coil is not changing
B current is going through its greatest rate of change
C the current through the coil is of a DC nature
D current is going through its least rate of change

B-005-011-007

The voltage induced in a conductor moving in a magnetic field is at a maximum when the movement is:

A perpendicular to the lines of force
B made in a counter clockwise direction
C parallel to the lines of force
D made in a clockwise direction

B-005-011-008

A 100% efficient transformer has a turns ratio of 1/5. If the secondary current is 50 milliamperes, the primary current is:

A 2 500 mA
B 0.01 A
C 0.25 mA
D 0.25 A

B-005-011-009

A force of repulsion exists between two _____ magnetic poles.

A negative
B like
C unlike
D positive

B-005-011-010

A permanent magnet would most likely be made from:

A copper
B aluminum
C brass
D steel

B-005-011-011

The fact that energy transfer from primary to secondary windings in a power transformer is not perfect is indicated by:

A high primary voltages
B warm iron laminations
C electrostatic shielding
D large secondary currents

B-005-012-001

Resonance is the condition that exists when:

A the circuit contains no resistance
B resistance is equal to the reactance
C inductive reactance and capacitive reactance are equal
D inductive reactance is the only opposition in the circuit

B-005-012-002

Parallel tuned circuits offer:

A low impedance at resonance
B zero impedance at resonance
C an impedance equal to resistance of the circuit
D high impedance at resonance

B-005-012-003

Resonance is an electrical property used to describe:

A the results of tuning a varicap (varactor)
B the frequency characteristic of a coil and capacitor circuit
C an inductor
D a set of parallel inductors

B-005-012-004

A tuned circuit is formed from two basic components. These are:

A directors and reflectors
B diodes and transistors
C inductors and capacitors
D resistors and transistors

B-005-012-005

When a parallel coil-capacitor combination is supplied with AC of different frequencies, there will be one frequency where the impedance will be highest. This is the:

A reactive frequency
B resonant frequency
C impedance frequency
D inductive frequency

B-005-012-006

In a parallel-resonant circuit at resonance, the circuit has a:

A low impedance
B low mutual inductance
C high mutual inductance
D high impedance

B-005-012-007

In a series resonant circuit at resonance, the circuit has:

A high mutual inductance
B low impedance
C high impedance
D low mutual inductance

B-005-012-008

A coil and an air-spaced capacitor are arranged to form a resonant circuit. The resonant frequency will remain the same if we:

A wind more turns on the coil
B add a resistor to the circuit
C increase the area of plates in the capacitor
D insert Mylar sheets between the plates of the capacitor

B-005-012-009

Resonant circuits in a receiver are used to:

A filter direct current
B increase power
C adjust voltage levels
D select signal frequencies

B-005-012-010

Resonance is the condition that exists when:

A inductive reactance is the only opposition in the circuit
B the circuit contains no resistance
C resistance is equal to the reactance
D inductive reactance and capacitive reactance are equal and opposite in sign

B-005-012-011

When a series LCR circuit is tuned to the frequency of the source, the:

A line current lags the applied voltage
B line current leads the applied voltage
C impedance is maximum
D line current reaches maximum

B-005-013-001

How is a voltmeter usually connected to a circuit under test?

A In quadrature with the circuit
B In phase with the circuit
C In parallel with the circuit
D In series with the circuit

B-005-013-002

How is an ammeter usually connected to a circuit under test?

A In series with the circuit
B In quadrature with the circuit
C In phase with the circuit
D In parallel with the circuit

B-005-013-003

What does a multimeter measure?

A Resistance and reactance
B SWR and power
C Voltage, current and resistance
D Resistance, capacitance and inductance

B-005-013-004

The correct instrument to measure plate current or collector current of a transmitter is:

A an ohmmeter
B a wattmeter
C a voltmeter
D an ammeter

B-005-013-005

Which of the following meters would you use to measure the power supply current drawn by a small hand-held transistorized receiver?

A A DC ammeter
B An RF ammeter
C An RF power meter
D An electrostatic voltmeter

B-005-013-006

When measuring current drawn from a DC power supply, it is true to say that the meter will act in circuit as:

A a perfect conductor
B an extra current drain
C an insulator
D a low value resistance

B-005-013-007

When measuring the current drawn by a receiver from a power supply, the current meter should be placed:

A in parallel with one of the receiver power leads
B in series with one of the receiver power leads
C in series with both receiver power leads
D in parallel with both receiver power supply leads

B-005-013-008

Potential difference is measured by means of:

A an ammeter
B a voltmeter
C a wattmeter
D an ohmmeter

B-005-013-009

The instrument used for measuring the flow of electrical current is the:

A faradmeter
B wattmeter
C voltmeter
D ammeter

B-005-013-010

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

A both voltmeter and ammeter in parallel
B the voltmeter in parallel and ammeter in series
C the voltmeter in series and ammeter in parallel
D both voltmeter and ammeter in series

B-006-001-001

What connects your transceiver to your antenna?

A A transmission line
B The power cord
C A ground wire
D A dummy load

B-006-001-002

The characteristic impedance of a transmission line is determined by the:

A length of the line
B frequency at which the line is operated
C load placed on the line
D physical dimensions and relative positions of the conductors

B-006-001-003

The characteristic impedance of a 20 metre piece of transmission line is 52 ohms. If 10 metres were cut off, the impedance would be:

A 26 ohms
B 39 ohms
C 13 ohms
D 52 ohms

B-006-001-004

The characteristic impedance of a coaxial line:

A is greater for larger diameter line
B can be the same for different diameter line
C changes significantly with the frequency of the energy it carries
D is correct for only one size of line

B-006-001-005

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

A 600 ohm open-wire line
B 75 ohm twin-lead
C Coaxial cable
D 300 ohm twin-lead

B-006-001-006

The characteristic impedance of a transmission line is:

A equal to the pure resistance which, if connected to the end of the line, will absorb all the power arriving along it
B the impedance of a section of the line one wavelength long
C the dynamic impedance of the line at the operating frequency
D the ratio of the power supplied to the line to the power delivered to the load

B-006-001-007

A transmission line differs from an ordinary circuit or network in communications or signalling devices in one very important way. That important aspect is:

A propagation delay
B capacitive reactance
C inductive reactance
D resistance

B-006-001-008

The characteristic impedance of a parallel wire transmission line does not depend on the:

A radius of the conductors
B centre to centre distance between conductors
C dielectric
D velocity of energy on the line

B-006-001-009

If the impedance terminating a transmission line differs significantly from the characteristic impedance of the line, what will be observed at the input of the line?

A An impedance nearly equal to the characteristic impedance
B Some value of impedance influenced by line length
C An infinite impedance
D A negative impedance

B-006-001-010

What factors determine the characteristic impedance of a parallel-conductor antenna transmission line?

A The radius of the conductors and the frequency of the signal
B The frequency of the signal and the length of the line
C The distance between the centres of the conductors and the radius of the conductors
D The distance between the centres of the conductors and the length of the line

B-006-001-011

What factors determine the characteristic impedance of a coaxial antenna transmission line?

A The ratio of the diameter of the inner conductor to the diameter of the outer shield
B The diameter of the shield and the length of the line
C The diameter of the shield and the frequency of the signal
D The frequency of the signal and the length of the line

B-006-002-001

What is a coaxial cable?

A Two wires side-by-side in a plastic ribbon
B Two wires side-by-side held apart by insulating rods
C Two wires twisted around each other in a spiral
D A center wire inside an insulating material which is covered by a metal sleeve or shield

B-006-002-002

What is parallel-conductor transmission line?

A Two wires twisted around each other in a spiral
B A center wire inside an insulating material which is covered by a metal sleeve or shield
C A metal pipe which is as wide or slightly wider than a wavelength of the signal it carries
D Two wires side-by-side held apart by insulating material

B-006-002-003

What kind of antenna transmission line is made of two conductors held apart by insulated rods?

A Open wire line
B Coaxial cable
C Twin lead in a plastic ribbon
D Twisted pair

B-006-002-004

What does the term "balun" mean?

A Balanced unmodulator
B Balanced antenna network
C Balanced to unbalanced
D Balanced unloader

B-006-002-005

Where would you install a balun to feed a dipole antenna with 50-ohm coaxial cable?

A Between the coaxial cable and the antenna
B Between the transmitter and the coaxial cable
C Between the antenna and the ground
D Between the coaxial cable and the ground

B-006-002-006

What is an unbalanced line?

A Transmission line with one conductor connected to ground
B Transmission line with neither conductor connected to ground
C Transmission line with both conductors connected to ground
D Transmission line with both conductors connected to each other

B-006-002-007

What device can be installed to feed a balanced antenna with an unbalanced transmission line?

A A triaxial transformer
B A wave trap
C A loading coil
D A balun

B-006-002-008

A flexible coaxial line contains:

A braided shield conductor and insulation around a central conductor
B four or more conductors running parallel
C only one conductor
D two parallel conductors separated by spacers

B-006-002-009

A balanced transmission line:

A has one conductor inside the other
B carries RF current on one wire only
C is made of one conductor only
D is made of two parallel wires

B-006-002-010

A 75 ohm transmission line could be matched to the 300 ohm feed point of an antenna:

A with an extra 250 ohm resistor
B by using a 4 to 1 trigatron
C by inserting a diode in one leg of the antenna
D by using a 4 to 1 impedance transformer

B-006-002-011

What kind of antenna transmission line can be constructed using two conductors which are maintained a uniform distance apart using insulated spreaders?

A Coaxial cable
B 75 ohm twin-lead
C 300 ohm twin-lead
D 600 ohm open wire line

B-006-003-001

Why does coaxial cable make a good antenna transmission line?

A You can make it at home, and its impedance matches most amateur antennas
B It is weatherproof, and its impedance matches most amateur antennas
C It is weatherproof, and its impedance is higher than that of most amateur antennas
D It can be used near metal objects, and its impedance is higher than that of most amateur antennas

B-006-003-002

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

A Twin lead
B Coaxial cable
C Ladder-line
D Twisted pair

B-006-003-003

What are some reasons not to use parallel-conductor transmission line?

A It is difficult to make at home, and it does not work very well with a high SWR
B It does not work well when tied down to metal objects, and you should use a balun and may have to use an impedance-matching device with your transceiver
C You must use an impedance-matching device with your transceiver, and it does not work very well with a high SWR
D It does not work well when tied down to metal objects, and it cannot operate under high power

B-006-003-004

What common connector type usually joins RG-213 coaxial cable to an HF transceiver?

A A banana plug connector
B A binding post connector
C A PL-259 connector
D An F-type cable connector

B-006-003-005

What common connector usually joins a hand-held transceiver to its antenna?

A An SMA connector
B A PL-259 connector
C An F-type cable connector
D A binding post connector

B-006-003-006

Which of these common connectors has the lowest loss at UHF?

A An F-type cable connector
B A BNC connector
C A PL-259 connector
D A type-N connector

B-006-003-007

If you install a 6 metre Yagi on a tower 60 metres (200 ft) from your transmitter, which of the following transmission lines provides the least loss?

A RG-213
B RG-174
C RG-59
D RG-58

B-006-003-008

Why should you regularly clean and tighten all antenna connectors?

A To help keep their contact resistance at a minimum
B To keep them looking nice
C To keep them from getting stuck in place
D To increase their capacitance

B-006-003-009

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

A Coaxial cable
B 75 ohm twin-lead
C 600 ohm open wire line
D 300 ohm twin-lead

B-006-003-010

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

A 75 ohm twin-lead
B Coaxial cable
C 300 ohm twin-lead
D 600 ohm open wire line

B-006-003-011

TV twin-lead transmission line can be used for a transmission line in an amateur station. The impedance of this line is approximately:

A 300 ohms
B 600 ohms
C 50 ohms
D 70 ohms

B-006-004-001

Why should you use only good quality coaxial cable and connectors for a UHF antenna system?

A To keep the power going to your antenna system from getting too high
B To keep the standing wave ratio of your antenna system high
C To keep RF loss low
D To keep television interference high

B-006-004-002

What are some reasons to use parallel-conductor transmission line?

A It will operate with a high SWR, and has less loss than coaxial cable
B It has low impedance, and will operate with a high SWR
C It will operate with a high SWR, and it works well when tied down to metal objects
D It has a low impedance, and has less loss than coaxial cable

B-006-004-003

If your transmitter and antenna are 15 metres (50 ft) apart, but are connected by 60 metres (200 ft) of RG-58 coaxial cable, what should be done to reduce transmission line loss?

A Shorten the excess cable
B Shorten the excess cable so the transmission line is an odd number of wavelengths long
C Roll the excess cable into a coil which is as small as possible
D Shorten the excess cable so the transmission line is an even number of wavelengths long

B-006-004-004

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

A Signal loss is the least when the length is the same as the signal's wavelength
B Signal loss is the same for any length of transmission line
C Signal loss increases as length increases
D Signal loss decreases as length increases

B-006-004-005

As the frequency of a signal is changed, what happens to signal loss in a transmission line?

A Signal loss increases with decreasing frequency
B Signal loss is the least when the signal's wavelength is the same as the transmission line's length
C Signal loss is the same for any frequency
D Signal loss increases with increasing frequency

B-006-004-006

Losses occurring on a transmission line between transmitter and antenna results in:

A less RF power being radiated
B an SWR reading of 1:1
C reflections occurring in the line
D the wire radiating RF energy

B-006-004-007

The lowest loss transmission line on HF is:

A 75 ohm twin-lead
B coaxial cable
C 300 ohm twin-lead
D open wire line

B-006-004-008

In what values are RF transmission line losses expressed?

A dB per unit length
B Ohms per MHz
C dB per MHz
D Ohms per metre

B-006-004-009

If the length of coaxial transmission line is increased from 20 metres (66 ft) to 40 metres (132 ft), how would this affect the line loss?

A It would be reduced to 50%
B It would be increased by 100%
C It would be reduced by 10%
D It would be increased by 10%

B-006-004-010

If the frequency is increased, how would this affect the loss on a transmission line?

A It would increase
B It is independent of frequency
C It depends on the line length
D It would decrease

B-006-005-001

What does an SWR reading of 1:1 mean?

A The best impedance match has been attained
B An antenna for another frequency band is probably connected
C No power is going to the antenna
D The SWR meter is broken

B-006-005-002

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

A An antenna gain of 1.5
B A fairly good impedance match
C An impedance match which is too low
D A serious impedance mismatch, something may be wrong with the antenna system

B-006-005-003

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

A A very low reading
B A jumpy reading
C A negative reading
D No reading at all

B-006-005-004

What does a very high SWR reading mean?

A The signals coming from the antenna are unusually strong, which means very good radio condition
B The antenna is the wrong length for the operating frequency, or the transmission line may be open or short circuited
C The transmitter is putting out more power than normal, showing that it is about to go bad
D There is a large amount of solar radiation, which means very poor radio conditions

B-006-005-005

What does standing-wave ratio mean?

A The ratio of maximum to minimum impedances on a transmission line
B The ratio of maximum to minimum voltages on a transmission line
C The ratio of maximum to minimum inductances on a transmission line
D The ratio of maximum to minimum resistances on a transmission line

B-006-005-006

If your antenna transmission line gets hot when you are transmitting, what might this mean?

A The transmission line is too long
B The SWR may be too high, or the transmission line loss may be high
C You should transmit using less power
D The conductors in the transmission line are not insulated very well

B-006-005-007

If the characteristic impedance of the transmission line does not match the antenna input impedance then:

A the antenna will not radiate any signal
B standing waves are produced in the transmission line
C heat is produced at the junction
D the SWR reading falls to 1:1

B-006-005-008

The result of the presence of standing waves on a transmission line is:

A reduced transfer of RF energy to the antenna
B perfect impedance match between transmitter and transmission line
C maximum transfer of energy to the antenna from the transmitter
D lack of radiation from the transmission line

B-006-005-009

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

A comparing forward and reflected voltage
B measuring radiated RF energy
C measuring the conductor temperature
D inserting a diode in the transmission line

B-006-005-010

A resonant antenna having a feed point impedance of 200 ohms is connected to a transmission line which has an impedance of 50 ohms. What will the standing wave ratio of this system be?

A 6:1
B 3:1
C 5:1
D 4:1

B-006-005-011

The type of transmission line best suited to operating at a high standing wave ratio is:

A 600 ohm open wire line
B 75 ohm twin-lead
C coaxial line
D 300 ohm twin-lead

B-006-006-001

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

A A low pass filter
B A high pass filter
C An antenna tuner
D An SWR meter

B-006-006-002

What does an antenna tuner do?

A It switches an antenna system to a transmitter when sending, and to a receiver when listening
B It switches a transceiver between different kinds of antennas connected to one transmission line
C It matches a transceiver to a mismatched antenna system
D It helps a receiver automatically tune in stations that are far away

B-006-006-003

What would you use to connect a coaxial cable of 50 ohms impedance to an antenna of 17 ohms impedance?

A An SWR meter
B A low pass filter
C A terminating resistor
D An impedance-matching device

B-006-006-004

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

A When air wound transformers are used instead of iron-core transformers
B When the power-supply fuse rating equals the primary winding current
C When the load resistance is infinite
D When the impedance of the load is equal to the impedance of the source

B-006-006-005

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

A The source delivers maximum power to the load
B The electrical load is shorted
C No current can flow through the circuit
D The source delivers minimum power to the load

B-006-006-006

Why is impedance matching important?

A To ensure that there is less resistance than reactance in the circuit
B To ensure that the resistance and reactance in the circuit are equal
C So the source can deliver maximum power to the load
D So the load will draw minimum power from the source

B-006-006-007

To obtain efficient power transmission from a transmitter to an antenna requires:

A high load impedance
B low load resistance
C inductive impedance
D matching of impedances

B-006-006-008

To obtain efficient transfer of power from a transmitter to an antenna, it is important that there is a:

A matching of impedance
B high load impedance
C proper method of balance
D low load resistance

B-006-006-009

If an antenna is correctly matched to a transmitter, the length of transmission line:

A must be a full wavelength long
B must be an odd number of quarter-wave
C must be an even number of half-waves
D will have no effect on the matching

B-006-006-010

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

A transfer the maximum amount of power to the antenna
B ensure that the radiated signal has the intended polarization
C prevent frequency drift
D overcome fading of the transmitted signal

B-006-006-011

If the centre impedance of a folded dipole is approximately 300 ohms, and you are using RG8U (50 ohms) coaxial lines, what is the ratio required to have the line and the antenna matched?

A 2:1
B 4:1
C 10:1
D 6:1

B-006-007-001

What does horizontal wave polarization mean?

A The electric and magnetic lines of force of a radio wave are perpendicular to the Earth's surface
B The electric lines of force of a radio wave are perpendicular to the Earth's surface
C The magnetic lines of force of a radio wave are parallel to the Earth's surface
D The electric lines of force of a radio wave are parallel to the Earth's surface

B-006-007-002

What does vertical wave polarization mean?

A The electric and magnetic lines of force of a radio wave are parallel to the Earth's surface
B The electric lines of force of a radio wave are parallel to the Earth's surface
C The electric lines of force of a radio wave are perpendicular to the Earth's surface
D The magnetic lines of force of a radio wave are perpendicular to the Earth's surface

B-006-007-003

What electromagnetic wave polarization does a Yagi antenna have when its elements are parallel to the Earth's surface?

A Helical
B Vertical
C Circular
D Horizontal

B-006-007-004

What electromagnetic wave polarization does a half-wavelength antenna have when it is perpendicular to the Earth's surface?

A Horizontal
B Parabolical
C Vertical
D Circular

B-006-007-005

Polarization of an antenna is determined by:

A the orientation of the electric field relative to the Earth's surface
B the height of the antenna
C the type of antenna
D the magnetic field

B-006-007-006

An isotropic antenna is:

A a dummy load
B a half-wave reference dipole
C a hypothetical point source
D an infinitely long piece of wire

B-006-007-007

What is the antenna radiation pattern for an isotropic radiator?

A A cardioid
B A unidirectional cardioid
C A sphere
D A parabola

B-006-007-008

VHF signals from a mobile station using a vertical whip antenna will normally be best received using a:

A horizontal dipole antenna
B vertical ground-plane antenna
C random length of wire
D horizontal ground-plane antenna

B-006-007-009

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

A parallel with the ground
B mounted vertically
C fed with the correct type of RF
D too near to the ground

B-006-007-010

If an electromagnetic wave leaves an antenna vertically polarized, it will arrive at the receiving antenna, by ground wave:

A polarized in any plane
B vertically polarized
C polarized at right angles to original
D horizontally polarized

B-006-007-011

Compared with a horizontal antenna, a vertical antenna will receive a vertically polarized radio wave:

A if the antenna changes the polarization
B at greater strength
C at weaker strength
D without any comparative difference

B-006-008-001

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

A It disappears
B It decreases
C It increases
D It stays the same

B-006-008-002

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

A It disappears
B It decreases
C It increases
D It stays the same

B-006-008-003

The wavelength for a frequency of 25 MHz is:

A 32 metres (105 ft)
B 12 metres (39.4 ft)
C 15 metres (49.2 ft)
D 4 metres (13.1 ft)

B-006-008-004

The velocity of propagation of radio frequency energy in free space is:

A 300 000 kilometres per second
B 3000 kilometres per second
C 150 kilometres per second
D 186 000 kilometres per second

B-006-008-005

Adding a series inductance to an antenna would:

A increase the resonant frequency
B have little effect
C have no change on the resonant frequency
D decrease the resonant frequency

B-006-008-006

The resonant frequency of an antenna may be increased by:

A lengthening the radiating element
B shortening the radiating element
C lowering the radiating element
D increasing the height of the radiating element

B-006-008-007

The speed of a radio wave:

A is the same as the speed of light
B is infinite in space
C is always less than half speed of light
D varies directly with frequency

B-006-008-008

At the end of suspended antenna wire, insulators are used. These act to:

A prevent any loss of radio waves by the antenna
B limit the electrical length of the antenna
C increase the effective antenna length
D allow the antenna to be more easily held vertically

B-006-008-009

To lower the resonant frequency of an antenna, the operator should:

A centre feed it with TV ribbon transmission line
B lengthen it
C shorten it
D ground one end

B-006-008-010

One solution to multiband operation with a shortened radiator is the "trap dipole" or trap vertical. These "traps" are actually:

A a coil and capacitor in parallel
B large wire-wound resistors
C coils wrapped around a ferrite rod
D hollow metal cans

B-006-008-011

The wavelength corresponding to a frequency of 2 MHz is:

A 360 m (1181 ft)
B 1500 m (4921 ft)
C 30 m (98 ft)
D 150 m (492 ft)

B-006-009-001

What is a parasitic beam antenna?

A An antenna where the driven element obtains its radio energy by induction or radiation from director elements
B An antenna where all elements are driven by direct connection to the transmission line
C An antenna where wave traps are used to magnetically couple the elements
D An antenna where some elements obtain their radio energy by induction or radiation from a driven element

B-006-009-002

How can the bandwidth of a parasitic beam antenna be increased?

A Use closer element spacing
B Use larger diameter elements
C Use traps on the elements
D Use tapered-diameter elements

B-006-009-003

If a parasitic element slightly shorter than a horizontal dipole antenna is placed parallel to the dipole 0.1 wavelength from it and at the same height, what effect will this have on the antenna's radiation pattern?

A A major lobe will develop in the horizontal plane, from the dipole toward the parasitic element
B A major lobe will develop in the horizontal plane, parallel to the two elements
C A major lobe will develop in the vertical plane, away from the ground
D The radiation pattern will not be affected

B-006-009-004

If a parasitic element slightly longer than a horizontal dipole antenna is placed parallel to the dipole 0.1 wavelength from it and at the same height, what effect will this have on the antenna's radiation pattern?

A A major lobe will develop in the horizontal plane, from the parasitic element toward the dipole
B A major lobe will develop in the horizontal plane, parallel to the two elements
C A major lobe will develop in the vertical plane, away from the ground
D The radiation pattern will not be affected

B-006-009-005

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

A bandwidth
B front-to-back ratio
C impedance
D polarization

B-006-009-006

Approximately how much gain does a half-wave dipole have over an isotropic radiator?

A 6.0 dB
B 2.1 dB
C 1.5 dB
D 3.0 dB

B-006-009-007

What is meant by antenna gain?

A The numerical ratio relating the radiated signal strength of an antenna to that of another antenna

B The numerical ratio of the signal in the forward direction to the signal in the back direction

C The numerical ratio of the amount of power radiated by an antenna compared to the transmitter output power

D The power amplifier gain minus the transmission line losses

B-006-009-008

What is meant by antenna bandwidth?

A The angle formed between two imaginary lines drawn through the ends of the elements

B The frequency range over which the antenna may be expected to perform well

C Antenna length divided by the number of elements

D The angle between the half-power radiation points

B-006-009-009

In free space, what is the radiation characteristic of a half-wave dipole?

A Maximum radiation from the ends, minimum broadside

B Omnidirectional

C Maximum radiation at 45 degrees to the plane of the antenna

D Minimum radiation from the ends, maximum broadside

B-006-009-010

The gain of an antenna, especially on VHF and above, is quoted in dBi. The "i" in this expression stands for:

A ionosphere

B interpolated

C isotropic

D ideal

B-006-009-011

The front-to-back ratio of a beam antenna is:

A the ratio of the maximum forward power in the major lobe to the maximum backward power radiation

B the forward power of the major lobe to the power in the backward direction both being measured at the 3 dB points

C undefined

D the ratio of the forward power at the 3 dB points to the power radiated in the backward direction

B-006-010-001

How do you calculate the length in metres (feet) of a quarter-wavelength vertical antenna?

A Divide 71.5 (234) by the antenna's operating frequency in MHz
B Divide 468 (1532) by the antenna's operating frequency in MHz
C Divide 300 (982) by the antenna's operating frequency in MHz
D Divide 150 (491) by the antenna's operating frequency in MHz

B-006-010-002

If you made a quarter-wavelength vertical antenna for 21.125 MHz, how long would it be?

A 7.2 metres (23.6 ft)
B 6.76 metres (22.2 ft)
C 3.36 metres (11.0 ft)
D 3.6 metres (11.8 ft)

B-006-010-003

If you made a half-wavelength vertical antenna for 223 MHz, how long would it be?

A 64 cm (25.2 in)
B 128 cm (50.4 in)
C 105 cm (41.3 in)
D 134.6 cm (53 in)

B-006-010-004

Why is a 5/8-wavelength vertical antenna better than a 1/4-wavelength vertical antenna for VHF or UHF mobile operations?

A A 5/8-wavelength antenna has more gain
B A 5/8-wavelength antenna has less corona loss
C A 5/8-wavelength antenna is easier to install on a car
D A 5/8-wavelength antenna can handle more power

B-006-010-005

If a magnetic-base whip antenna is placed on the roof of a car, in what direction does it send out radio energy?

A Most of it goes in one direction
B It goes out equally well in all horizontal directions
C Most of it is aimed high into the sky
D Most of it goes equally in two opposite directions

B-006-010-006

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

A It brings the feed point impedance closer to 300 ohms
B It lowers the radiation angle
C It brings the feed point impedance closer to 50 ohms
D It increases the radiation angle

B-006-010-007

What happens to the feed point impedance of a ground-plane antenna when its radials are changed from horizontal to downward-sloping?

A It increases
B It decreases
C It stays the same
D It approaches zero

B-006-010-008

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

A 300 ohms balanced transmission line
B 75 ohms balanced transmission line
C 300 ohms coaxial cable
D 50 ohms coaxial cable

B-006-010-009

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

A be very sensitive to signals coming from horizontal antennas
B require few insulators
C be easy to feed with TV ribbon transmission line
D receive signals equally well from all compass points around it

B-006-010-010

Why is a loading coil often used with an HF mobile vertical antenna?

A To tune out capacitive reactance
B To lower the losses
C To lower the Q
D To filter out electrical noise

B-006-010-011

What is the main reason why so many VHF base and mobile antennas are 5/8 of a wavelength?

A It's a convenient length on VHF
B The angle of radiation is low
C The angle of radiation is high giving excellent local coverage
D It is easy to match the antenna to the transmitter

B-006-011-001

How many directly driven elements do most Yagi antennas have?

A Three
B None
C One
D Two

B-006-011-002

Approximately how long is the driven element of a Yagi antenna for 14.0 MHz?

A 20.12 metres (66 feet)
B 10.21 metres (33.5 feet)
C 5.21 metres (17 feet)
D 10.67 metres (35 feet)

B-006-011-003

Approximately how long is the director element of a Yagi antenna for 21.1 MHz?

A 6.4 metres (21 feet)
B 5.18 metres (17 feet)
C 3.2 metres (10.5 feet)
D 12.8 metres (42 feet)

B-006-011-004

Approximately how long is the reflector element of a Yagi antenna for 28.1 MHz?

A 2.66 metres (8.75 feet)
B 5.33 metres (17.5 feet)
C 4.88 metres (16 feet)
D 10.67 metres (35 feet)

B-006-011-005

What is one effect of increasing the boom length and adding directors to a Yagi antenna?

A Weight decreases
B Wind load decreases
C Gain increases
D SWR increases

B-006-011-006

What are some advantages of a Yagi with wide element spacing?

A High gain, lower loss and a low SWR
B High front-to-back ratio and lower input resistance
C Shorter boom length, lower weight and wind resistance
D High gain, less critical tuning and wider bandwidth

B-006-011-007

Why is a Yagi antenna often used for radiocommunications on the 20-metre band?

A It provides excellent omnidirectional coverage in the horizontal plane
B It is smaller, less expensive and easier to erect than a dipole or vertical antenna
C It provides the highest possible angle of radiation for the HF bands
D It helps reduce interference from other stations off to the side or behind

B-006-011-008

What does "antenna front-to-back ratio" mean in reference to a Yagi antenna?

A The power radiated in the major radiation lobe compared to the power radiated 90 degrees away from that direction
B The number of directors versus the number of reflectors
C The power radiated in the major radiation lobe compared to the power radiated in exactly the opposite direction
D The relative position of the driven element with respect to the reflectors and directors

B-006-011-009

What is a good way to get maximum performance from a Yagi antenna?

A Use RG-58 transmission line
B Use a reactance bridge to measure the antenna performance from each direction around the antenna
C Avoid using towers higher than 9 metres (30 feet) above the ground
D Optimize the lengths and spacing of the elements

B-006-011-010

The spacing between the elements on a three-element Yagi antenna, representing the best overall choice, is _____ of a wavelength.

A 0.10
B 0.50
C 0.75
D 0.20

B-006-011-011

If the forward gain of a six-element Yagi is about 10 dBi, what would the gain of two of these antennas be if they were "stacked"?

A 7 dBi
B 20 dBi
C 10 dBi
D 13 dBi

B-006-012-001

If you made a half-wavelength dipole antenna for 28.150 MHz, how long would it be?

A 10.16 metres (33.26 ft)
B 5.08 metres (16.62 ft)
C 10.5 metres (34.37 ft)
D 28.55 metres (93.45 ft)

B-006-012-002

What is one disadvantage of a random wire antenna?

A It usually produces vertically polarized radiation
B It must be longer than 1 wavelength
C You must use an inverted T matching network for multi-band operation
D You may experience RF feedback in your station

B-006-012-003

What is the low angle radiation pattern of an ideal half-wavelength dipole HF antenna in free space installed parallel to the Earth?

A It is a figure-eight, off both ends of the antenna
B It is a figure-eight, perpendicular to the antenna
C It is a circle (equal radiation in all directions)
D It is two smaller lobes on one side of the antenna, and one larger lobe on the other side

B-006-012-004

The impedances in ohms at the feed point of the dipole and folded dipole in free space are, respectively:

A 73 and 300
B 73 and 150
C 52 and 100
D 52 and 200

B-006-012-005

A horizontal dipole transmitting antenna, installed at an ideal height so that the ends are pointing North/South, radiates:

A mostly to the East and West
B mostly to the South and North
C mostly to the South
D equally in all directions

B-006-012-006

How does the bandwidth of a folded dipole antenna compare with that of a simple dipole antenna?

A It is 0.707 times the bandwidth
B It is greater
C It is essentially the same
D It is less than 50%

B-006-012-007

What is a disadvantage of using an antenna equipped with traps?

A It can only be used for one band
B It may radiate harmonics more readily
C It is too sharply directional at lower frequencies
D It must be neutralized

B-006-012-008

What is an advantage of using a trap antenna?

A It minimizes harmonic radiation
B It may be used for multi-band operation
C It has high directivity at the higher frequencies
D It has high gain

B-006-012-009

If you were to cut a half wave dipole for 3.75 MHz, what would be its approximate length?

A 38 meters (125 ft)
B 32 meters (105 ft)
C 45 meters (145 ft)
D 75 meters (245 ft)

B-006-013-001

What is a cubical quad antenna?

A Two or more parallel four-sided wire loops, each approximately one-electrical wavelength long
B A center-fed wire 1/2-electrical wavelength long
C A vertical conductor 1/4-electrical wavelength high, fed at the bottom
D Four straight, parallel elements in line with each other, each approximately 1/2-electrical wavelength long

B-006-013-002

What is a delta loop antenna?

A A large copper ring or wire loop, used in direction finding
B An antenna system made of three vertical antennas, arranged in a triangular shape
C An antenna made from several triangular coils of wire on an insulating form
D An antenna whose elements are each a three sided loop whose total length is approximately one electrical wavelength

B-006-013-003

Approximately how long is each side of a cubical quad antenna driven element for 21.4 MHz?

A 3.54 metres (11.7 feet)
B 0.36 metres (1.17 feet)
C 14.33 metres (47 feet)
D 143 metres (469 feet)

B-006-013-004

Approximately how long is each side of a cubical quad antenna driven element for 14.3 MHz?

A 5.36 metres (17.6 feet)
B 21.43 metres (70.3 feet)
C 53.34 metres (175 feet)
D 7.13 metres (23.4 feet)

B-006-013-005

Approximately how long is each leg of a symmetrical delta loop antenna driven element for 28.7 MHz?

A 3.5 metres (11.5 feet)
B 2.67 metres (8.75 feet)
C 7.13 metres (23.4 feet)
D 10.67 metres (35 feet)

B-006-013-006

Which statement about two-element delta loops and quad antennas is true?

A They are effective only when constructed using insulated wire
B They perform poorly above HF
C They compare favourably with a three-element Yagi
D They perform very well only at HF

B-006-013-007

Compared to a dipole antenna, what are the directional radiation characteristics of a cubical quad antenna?

A The quad has less directivity in both horizontal and vertical planes
B The quad has more directivity in both horizontal and vertical planes
C The quad has more directivity in the horizontal plane but less directivity in the vertical plane
D The quad has less directivity in the horizontal plane but more directivity in the vertical plane

B-006-013-008

Moving the feed point of a multi-element quad antenna from a side parallel to the ground to a side perpendicular to the ground will have what effect?

A It will significantly increase the antenna feed point impedance
B It will change the antenna polarization from horizontal to vertical
C It will change the antenna polarization from vertical to horizontal
D It will significantly decrease the antenna feed point impedance

B-006-013-009

What does the term "antenna front-to-back ratio" mean in reference to a delta loop antenna?

A The relative position of the driven element with respect to the reflectors and directors
B The power radiated in the major radiation lobe compared to the power radiated 90 degrees away from that direction
C The number of directors versus the number of reflectors
D The power radiated in the major radiation lobe compared to the power radiated in exactly the opposite direction

B-006-013-010

The cubical "quad" or "quad" antenna consists of two or more square loops of wire. The driven element has an approximate overall length of:

A one-half wavelength
B one wavelength
C three-quarters of a wavelength
D two wavelengths

B-006-013-011

The delta loop antenna consists of two or more triangular structures mounted on a boom. The overall length of the driven element is approximately:

A two wavelengths
B one-half of a wavelength
C one wavelength
D one-quarter of a wavelength

B-007-001-001

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

A Line-of-sight propagation
B Tunnel propagation
C Skywave propagation
D Auroral propagation

B-007-001-002

How does the range of sky-wave propagation compare to ground-wave propagation?

A It is much shorter
B It is about the same
C It depends on the weather
D It is much longer

B-007-001-003

When a signal is returned to Earth by the ionosphere, what is this called?

A Earth-Moon-Earth propagation
B Sky-wave propagation
C Tropospheric propagation
D Ground-wave propagation

B-007-001-004

How are VHF signals propagated within the range of the visible horizon?

A By plane wave
B By geometric wave
C By direct wave
D By sky wave

B-007-001-005

Skywave is another name for:

A inverted wave
B ionospheric wave
C tropospheric wave
D ground wave

B-007-001-006

That portion of the radiation which is directly affected by the surface of the Earth is called:

A inverted wave
B ground wave
C tropospheric wave
D ionospheric wave

B-007-001-007

At lower HF frequencies, radiocommunication out to 200 km is made possible by:

A ground wave
B troposphere
C skip wave
D ionosphere

B-007-001-008

The distance travelled by ground waves:

A is less at higher frequencies
B depends on the maximum usable frequency
C is more at higher frequencies
D is the same for all frequencies

B-007-001-00

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

A F layer
B surface wave
C skip wave
D ionospheric wave

B-007-001-010

Reception of high frequency (HF) radio waves beyond 4000 km is generally made possible by:

A ionospheric wave
B ground wave
C skip wave
D surface wave

B-007-002-001

What causes the ionosphere to form?

A Solar radiation ionizing the outer atmosphere
B Lightning ionizing the outer atmosphere
C Release of fluorocarbons into the atmosphere
D Temperature changes ionizing the outer atmosphere

B-007-002-002

What type of solar radiation is most responsible for ionization in the outer atmosphere?

A Ionized particles
B Thermal
C Ultraviolet
D Microwave

B-007-002-003

Which ionospheric region is closest to the Earth?

A The F region
B The A region
C The D region
D The E region

B-007-002-004

Which region of the ionosphere is the least useful for long distance radio-wave propagation?

A The F1 region
B The E region
C The D region
D The F2 region

B-007-002-005

What two sub-regions of ionosphere exist only in the daytime?

A Electrostatic and electromagnetic
B D and E
C F1 and F2
D Troposphere and stratosphere

B-007-002-006

When is the ionosphere most ionized?

A Dusk
B Midday
C Dawn
D Midnight

B-007-002-007

When is the ionosphere least ionized?

A Shortly before midnight
B Shortly before dawn
C Just after noon
D Just after dusk

B-007-002-008

Why is the F2 region mainly responsible for the longest distance radio-wave propagation?

A Because it exists only at night
B Because it is the lowest ionospheric region
C Because it does not absorb radio waves as much as other ionospheric regions
D Because it is the highest ionospheric region

B-007-002-009

What is the main reason the 160, 80 and 40 metre amateur bands tend to be useful only for short-distance communications during daylight hours?

A Because of auroral propagation
B Because of magnetic flux
C Because of a lack of activity
D Because of D-region absorption

B-007-002-010

During the day, one of the ionospheric layers splits into two parts called:

A A and B
B F1 and F2
C D1 and D2
D E1 and E2

B-007-002-011

The position of the E layer in the ionosphere is:

A above the F layer
B below the F layer
C below the D layer
D sporadic

B-007-003-001

What is a skip zone?

A An area covered by sky-wave propagation
B An area covered by ground-wave propagation
C An area which is too far away for ground-wave propagation, but too close for sky-wave propagation
D An area which is too far away for ground-wave or sky-wave propagation

B-007-003-002

What is the maximum distance along the Earth's surface that is normally covered in one hop using the F2 region?

A 2000 km (1250 miles)
B 300 km (190 miles)
C 4000 km (2500 miles)
D None, the F2 region does not support radio-wave propagation

B-007-003-003

What is the maximum distance along the Earth's surface that is normally covered in one hop using the E region?

A 2000 km (1250 miles)
B 300 km (190 miles)
C 4000 km (2500 miles)
D None, the E region does not support radio-wave propagation

B-007-003-004

Skip zone is:

A a zone between any two refracted waves
B a zone between the antenna and the return of the first refracted wave
C a zone between the end of the ground wave and the point where the first refracted wave returns to Earth
D a zone of silence caused by lost sky waves

B-007-003-005

The distance to Europe from your location is approximately 5000 km. What sort of propagation is the most likely to be involved?

A Tropospheric scatter
B Multihop
C Sporadic "E"
D Back scatter

B-007-003-006

For radio signals, the skip distance is determined by the:

A angle of radiation
B type of transmitting antenna used
C height of the ionosphere and the angle of radiation
D power fed to the power amplifier

B-007-003-007

The distance from the transmitter to the nearest point where the sky wave returns to the Earth is called the:

A skip distance
B skip zone
C angle of radiation
D maximum usable frequency

B-007-003-008

Skip distance is the:

A the minimum distance reached by a ground-wave signal
B the maximum distance a signal will travel by both a ground wave and reflected wave
C the minimum distance reached by a signal after one reflection by the ionosphere
D the maximum distance reached by a signal after one reflection by the ionosphere

B-007-003-009

Skip distance is a term associated with signals from the ionosphere. Skip effects are due to:

A local cloud cover
B reflection and refraction from the ionosphere
C selective fading of local signals
D high gain antennas being used

B-007-003-010

The skip distance of a sky wave will be greatest when the:

A signal given out is strongest
B angle between the ground and the radiation is smallest
C polarization is vertical
D ionosphere is most densely ionized

B-007-003-011

If the height of the reflecting layer of the ionosphere increases, the skip distance of a high frequency (HF) transmission:

A varies regularly
B decreases
C becomes greater
D stays the same

B-007-004-001

What effect does the D region of the ionosphere have on lower frequency HF signals in the daytime?

A It refracts the radio waves back to Earth
B It has little or no effect on 80-metre radio waves
C It absorbs the signals
D It bends the radio waves out into space

B-007-004-002

What causes distant AM broadcast and 160 metre ham band stations not to be heard during daytime hours?

A The splitting of the F region
B The weather below the ionosphere
C The ionization of the D region
D The presence of ionized clouds in the E region

B-007-004-003

Two or more parts of the radio wave follow different paths during propagation and this may result in phase differences at the receiver. This "change" at the receiver is called:

A fading
B baffling
C absorption
D skip

B-007-004-004

A change or variation in signal strength at the antenna, caused by differences in path lengths, is called:

A fluctuation
B path loss
C fading
D absorption

B-007-004-005

When a transmitted radio signal reaches a station by a one-hop and two-hop skip path, small changes in the ionosphere can cause:

A variations in signal strength
B consistent fading of received signal
C consistently stronger signals
D a change in the ground-wave signal

B-007-004-006

The usual effect of ionospheric storms is to:

A produce extreme weather changes
B prevent communications by ground wave
C increase the maximum usable frequency
D cause a fade-out of sky-wave signals

B-007-004-007

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?

A Greater selectivity is possible with HF receivers making changes in polarization redundant
B The ionosphere can change the polarization of the signal from moment to moment
C The ground wave and the sky wave continually shift the polarization
D Anomalies in the Earth's magnetic field produce a profound effect on HF polarization but not on VHF & UHF frequencies

B-007-004-008

What causes selective fading?

A Large changes in the height of the ionosphere at the receiving station ordinarily occurring shortly before sunrise and sunset
B Phase differences between radio wave components of the same transmission, as experienced at the receiving station
C Small changes in beam heading at the receiving station
D Time differences between the receiving and transmitting stations

B-007-004-009

How does the bandwidth of a transmitted signal affect selective fading?

A It is the same for both wide and narrow bandwidths
B Only the receiver bandwidth determines the selective fading effect
C It is more pronounced at narrow bandwidths
D It is more pronounced at wide bandwidths

B-007-004-010

Polarization change often takes place on radio waves that are propagated over long distances. Which of these does not cause polarization change?

A Passage through magnetic fields (Faraday rotation)
B Refractions
C Parabolic interaction
D Reflections

B-007-004-011

Reflection of a SSB transmission from the ionosphere causes:

A phase-shift distortion
B signal cancellation at the receiver
C a high-pitch squeal at the receiver
D little or no phase-shift distortion

B-007-005-001

How do sunspots change the ionization of the atmosphere?

A The more sunspots there are, the greater the ionization
B The more sunspots there are, the less the ionization
C Unless there are sunspots, the ionization is zero
D They have no effect

B-007-005-00

How long is an average sunspot cycle?

A 11 years
B 17 years
C 5 years
D 7 years

B-007-005-003

What is solar flux?

A The radio energy emitted by the sun
B A measure of the tilt of the Earth's ionosphere on the side toward the sun
C The number of sunspots on the side of the sun facing the Earth
D The density of the sun's magnetic field

B-007-005-004

What is the solar-flux index?

A Another name for the American sunspot number
B A measure of solar activity that compares daily readings with results from the last six months
C A measure of solar activity that is taken annually
D A measure of solar activity that is taken at a specific frequency

B-007-005-005

What influences all radiocommunication beyond ground-wave or line-of-sight ranges?

A The F1 region of the ionosphere
B Lunar tidal effects
C Solar radiation
D The F2 region of the ionosphere

B-007-005-006

Which two types of radiation from the sun influence propagation?

A Polar region and equatorial emissions
B Infrared and gamma-ray emissions
C Electromagnetic and particle emissions
D Subaudible and audio-frequency emissions

B-007-005-007

When sunspot numbers are high, how is propagation affected?

A Frequencies up to 100 MHz or higher are normally usable for long-distance communication
B High frequency radio signals become weak and distorted
C Frequencies up to 40 MHz or even higher become usable for long-distance communication
D High frequency radio signals are absorbed

B-007-005-008

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

A atmospheric conditions
B sun
C ionosphere
D aurora borealis

B-007-005-009

Average duration of a solar cycle is:

A 6 years
B 1 year
C 11 years
D 3 years

B-007-005-010

The ability of the ionosphere to reflect high frequency radio signals depends on:

A the amount of solar radiation
B the power of the transmitted signal
C the receiver sensitivity
D upper atmosphere weather conditions

B-007-005-011

HF radio propagation cycles have a period of approximately 11:

A centuries
B years
C months
D days

B-007-006-001

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

A Their frequency is changed by the ionosphere to be below the maximum usable frequency
B They are reflected back to their source
C They pass through the ionosphere
D They are absorbed by the ionosphere

B-007-006-002

What causes the maximum usable frequency to vary?

A The speed of the winds in the upper atmosphere
B The type of weather just below the ionosphere
C The amount of radiation received from the sun, mainly ultraviolet
D The temperature of the ionosphere

B-007-006-003

What does maximum usable frequency mean?

A The highest frequency signal that is most absorbed by the ionosphere
B The lowest frequency signal that is most absorbed by the ionosphere
C The highest frequency signal that will reach its intended destination
D The lowest frequency signal that will reach its intended destination

B-007-006-004

What can be done at an amateur station to continue HF communications during a sudden ionospheric disturbance?

A Try a different antenna polarization
B Try a different frequency shift
C Try a higher frequency band
D Try the other sideband

B-007-006-005

What is one way to determine if the maximum usable frequency (MUF) is high enough to support 28 MHz propagation between your station and western Europe?

A Listen for signals from 20-metre beacon stations
B Listen for signals from 39-metre broadcast stations
C Listen for WWVH time signals on 20 MHz
D Listen for signals from 10-metre beacon stations

B-007-006-006

What usually happens to radio waves with frequencies below the maximum usable frequency (MUF) when they are sent into the ionosphere?

A They are changed to a frequency above the MUF
B They are completely absorbed by the ionosphere
C They pass through the ionosphere
D They are bent back to the Earth

B-007-006-007

At what point in the solar cycle does the 20-metre band usually support worldwide propagation during daylight hours?

A At any point in the solar cycle
B Only at the minimum point of the solar cycle
C Only at the maximum point of the solar cycle
D At the summer solstice

B-007-006-008

If we transmit a signal, the frequency of which is so high we no longer receive a reflection from the ionosphere, the signal frequency is above the:

A sunspot frequency
B maximum usable frequency
C skip distance
D speed of light

B-007-006-009

Communication on the 80 metre band is generally most difficult during:

A evening in winter
B evening in summer
C daytime in winter
D daytime in summer

B-007-006-010

The optimum working frequency provides the best long range HF communication. Compared with the maximum usable frequency (MUF), it is usually:

A double the MUF
B half the MUF
C slightly higher
D slightly lower

B-007-006-011

During summer daytime, which bands are the most difficult for communications beyond ground wave?

A 30 metres
B 20 metres
C 160 and 80 metres
D 40 metres

B-007-007-001

Which ionospheric region most affects sky-wave propagation on the 6 metre band?

A The F2 region
B The F1 region
C The D region
D The E region

B-007-007-002

What effect does tropospheric bending have on 2-metre radio waves?

A It causes them to travel shorter distances
B It garbles the signal
C It reverses the sideband of the signal
D It lets you contact stations farther away

B-007-007-003

What causes tropospheric ducting of radio waves?

A An aurora to the north
B A very low pressure area
C A temperature inversion
D Lightning between the transmitting and receiving stations

B-007-007-004

That portion of the radiation kept close to the Earth's surface due to bending in the atmosphere is called the:

A ionospheric wave
B tropospheric wave
C inverted wave
D ground wave

B-007-007-005

What is a sporadic-E condition?

A Partial tropospheric ducting at E-region height
B Variations in E-region height caused by sunspot variations
C A brief decrease in VHF signals caused by sunspot variations
D Patches of dense ionization at E-region height

B-007-007-006

On which amateur frequency band is the extended-distance propagation effect of sporadic-E most often observed?

A 160 metres
B 20 metres
C 2 metres
D 6 metres

B-007-007-007

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

A East
B West
C South
D North

B-007-007-008

Where in the ionosphere does auroral activity occur?

A At E-region height
B At F-region height
C In the equatorial band
D At D-region height

B-007-007-009

Which emission mode is best for auroral propagation?

A FM
B SSB
C CW
D RTTY

B-007-007-010

Excluding enhanced propagation modes, what is the approximate range of normal VHF tropospheric propagation?

A 1600 km (1000 miles)
B 800 km (500 miles)
C 2400 km (1500 miles)
D 3200 km (2000 miles)

B-007-007-011

What effect is responsible for propagating a VHF signal over 800 km (500 miles)?

A D-region absorption
B Moon bounce (EME) Earth - Moon - Earth
C Tropospheric ducting
D Faraday rotation

B-007-008-001

What kind of unusual HF propagation allows weak signals from the skip zone to be heard occasionally?

A Ducting
B Ground-wave
C Scatter-mode
D Sky-wave with low radiation angle

B-007-008-002

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

A Line-of-sight
B Ducting
C Scatter
D Ground-wave

B-007-008-003

What is a characteristic of HF scatter signals?

A Reversed sidebands
B High intelligibility
C Rapid flutter or hollow sounding distortion
D Reversed modulation

B-007-008-004

What makes HF scatter signals often sound distorted?

A The state of the E-region at the point of refraction
B Energy scattered into the skip zone through several radio-wave paths
C Auroral activity and changes in the Earth's magnetic field
D Propagation through ground waves that absorb much of the signal

B-007-008-005

Why are HF scatter signals usually weak?

A The F region of the ionosphere absorbs most of the signal energy
B Auroral activity absorbs most of the signal energy
C Only a small part of the signal energy is scattered into the skip zone
D Propagation through ground waves absorbs most of the signal energy

B-007-008-006

What type of propagation may allow a weak signal to be heard at a distance too far for ground-wave propagation but too near for normal sky-wave propagation?

A Short-path skip
B Sporadic-E skip
C Ground wave
D Scatter

B-007-008-007

On the HF bands, when is scatter propagation most likely involved?

A When the sunspot cycle is at a minimum and D-region absorption is high
B At night
C When the F1 and F2 regions are combined
D When weak and distorted signals near or above the maximum usable frequency for normal propagation can be heard over unusual paths

B-007-008-008

Which of the following is not a scatter mode?

A Ionospheric scatter
B Absorption scatter
C Meteor scatter
D Tropospheric scatter

B-007-008-009

Meteor scatter is most effective on what band?

A 15 metres
B 160 metres
C 6 metres
D 40 metres

B-007-008-010

Which of the following is not a scatter mode?

A Back scatter
B Forward scatter
C Inverted scatter
D Side scatter

B-007-008-011

In which frequency range is meteor scatter most effective for extended-range communication?

A 3 - 10 MHz
B 100 - 300 MHz
C 30 - 100 MHz
D 10 - 30 MHz

B-008-001-001

What is meant by receiver overload?

A Too much current from the power supply
B Too much voltage from the power supply
C Interference caused by strong signals from a nearby transmitter
D Interference caused by turning the volume up too high

B-008-001-002

What is one way to tell if radio frequency interference to a receiver is caused by front-end overload?

A If grounding the receiver makes the problem worse
B If connecting a low pass filter to the receiver greatly cuts down the interference
C If connecting a low pass filter to the transmitter greatly cuts down the interference
D If the interference is about the same no matter what frequency is used for the transmitter

B-008-001-003

If a neighbour reports television interference whenever you transmit, no matter what band you use, what is probably the cause of the interference?

A Receiver overload
B Incorrect antenna length
C Receiver VR tube discharge
D Too little transmitter harmonic suppression

B-008-001-004

What type of filter should be connected to a TV receiver as the first step in trying to prevent RF overload from an amateur HF station transmission?

A High-pass
B Low-pass
C Band-pass
D No filter

B-008-001-005

During a club ARRL Field Day outing, reception on the 20 m SSB station is compromised every time the 20 m CW station is on the air. What might cause such interference?

A Improper station grounding
B Harmonic radiation
C Receiver desensitization
D Both stations are fed from the same generator

B-008-001-006

Inter-modulation in a broadcast receiver by a nearby transmitter would be noticed in the receiver as:

A distortion on transmitted voice peaks
B interference continuously across the dial
C the undesired signal in the background of the desired signal
D interference only when a broadcast signal is tuned

B-008-001-007

You have connected your hand-held VHF transceiver to an outside gain antenna. You now hear a mixture of signals together with different modulation on your desired frequency. What is the nature of this interference?

A Audio stage intermodulation interference
B Receiver intermodulation interference
C Harmonic interference from other stations
D Audio stage overload interference

B-008-001-008

Two or more strong out-of-band signals mix in your receiver to produce interference on a desired frequency. What is this called?

A Front-end desensitization
B Intermodulation interference
C Receiver quieting
D Capture effect

B-008-001-009

Two mobile stations are traveling along the same road in close proximity to each other and having trouble communicating through a local repeater. Why may it be necessary to use simplex operation to communicate between these cars?

A Simplex operation does not require the use of CTCSS tones
B There is less time delay using simplex operation compared to using a repeater
C There are many more simplex frequencies than repeater frequencies available
D The strong signal of one mobile transmitter may desensitize the receiver of the other mobile receiver

B-008-001-010

A television receiver suffers interference on channel 5 (76 - 82 MHz) only when you transmit on 14 MHz. From your home you see the tower of a commercial FM station known to broadcast on 92.5 MHz. Which of these solutions would you try first?

A Insert a low pass filter at the antenna connector of the HF transmitter
B Insert a high pass filter at the antenna connector of the HF transmitter
C Insert a low pass filter at the antenna connector of the television
D Insert a high pass filter at the antenna connector of the television

B-008-001-011

How can intermodulation be reduced?

A By increasing the receiver RF gain while decreasing the AF gain
B By adjusting the passband tuning
C By installing a suitable filter at the receiver
D By using a better antenna

B-008-002-001

What devices would you install to reduce or eliminate audio-frequency interference to home entertainment systems?

A Metal-oxide varistors
B Bypass inductors
C Coils on ferrite cores
D Bypass resistors

B-008-002-002

What should be done if a properly operating amateur station is the cause of interference to a nearby telephone?

A Ground and shield the local telephone distribution amplifier
B Stop transmitting whenever the telephone is in use
C Make internal adjustments to the telephone equipment
D Install a modular plug-in telephone RFI filter close to the telephone device

B-008-002-003

What sound is heard from a public-address system if audio rectification of a nearby single-sideband phone transmission occurs?

A Clearly audible speech from the transmitter's signals
B On-and-off humming or clicking
C A steady hum whenever the transmitter's carrier is on the air
D Distorted speech from the transmitter's signals

B-008-002-004

What sound is heard from a public-address system if audio rectification of a nearby CW transmission occurs?

A A steady whistling
B On-and-off humming or clicking
C Audible, possibly distorted speech
D Muffled, severely distorted speech

B-008-002-005

How can you minimize the possibility of audio rectification of your transmitter's signals?

A Use CW only
B Use a solid-state transmitter
C Ensure that all station equipment is properly grounded
D Install bypass capacitors on all power supply rectifiers

B-008-002-006

An amateur transmitter is being heard across the entire dial of a broadcast receiver. The receiver is most probably suffering from:

A audio rectification in the receiver
B harmonics interference from the transmitter
C poor image rejection
D splatter from the transmitter

B-008-002-007

Your SSB HF transmissions are heard muffled on a sound system in the living room regardless of its volume setting. What causes this?

A Audio rectification of strong signals
B Harmonics generated at the transmitter
C Improper filtering in the transmitter
D Lack of receiver sensitivity and selectivity

B-008-002-008

What device can be used to minimize the effect of RF pickup by audio wires connected to stereo speakers, intercom amplifiers, telephones, etc.?

A Diode
B Ferrite core
C Magnet
D Attenuator

B-008-002-009

Stereo speaker leads often act as antennas to pick up RF signals. What is one method you can use to minimize this effect?

A Lengthen the leads
B Connect the speaker through an audio attenuator
C Connect a diode across the speaker
D Shorten the leads

B-008-002-010

One method of preventing RF from entering a stereo set through the speaker leads is to wrap each of the speaker leads:

A around an iron bar
B around a wooden dowel
C through a ferrite core
D around a copper bar

B-008-002-011

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

A RF attenuators
B frequency discriminators
C receiving antennas
D transmitting antennas

B-008-003-001

How can you prevent key-clicks?

A By using a better power supply
B By sending CW more slowly
C By using a key-click filter
D By increasing power

B-008-003-002

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

A Your hand-held has a chirp from weak batteries
B You need to turn the volume up on your hand-held
C Your hand-held is transmitting spurious emissions
D You need a power amplifier for your hand-held

B-008-003-003

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

A Spurious emissions
B Side tones
C Transmitter chirping
D Off-frequency emissions

B-008-003-004

What problem may occur if your transmitter is operated without the cover and other shielding in place?

A It may radiate spurious emissions
B It may transmit a weak signal
C It may interfere with other stations operating near its frequency
D It may transmit a chirpy signal

B-008-003-005

In Morse code transmission, local RF interference (key-clicks) is produced by:

A the making and breaking of the circuit at the Morse key
B frequency shifting caused by poor voltage regulation
C the power amplifier, and is caused by high frequency parasitic oscillations
D poor waveshaping caused by a poor voltage regulator

B-008-003-006

Key-clicks, heard from a Morse code transmitter at a distant receiver, are the result of:

A changes in oscillator frequency on keying
B too sharp rise and decay times of the keyed carrier
C power supply hum modulating the carrier
D sparks emitting RF from the key contacts

B-008-003-007

In a Morse code transmission, broad bandwidth RF interference (key-clicks) heard at a distance is produced by:

A poor shaping of the waveform
B shift in frequency when keying the transmitter
C sparking at the key contacts
D sudden movement in the receiver loudspeaker

B-008-003-008

What should you do if you learn your transmitter is producing key clicks?

A Check the keying filter and the functioning of later stages
B Turn the receiver down
C Regulate the oscillator supply voltage
D Use a choke in the RF power output

B-008-003-009

A parasitic oscillation:

A is generated by parasitic elements of a Yagi beam
B does not cause any radio interference
C is produced in a transmitter oscillator stage
D is an unwanted signal developed in a transmitter

B-008-003-010

Parasitic oscillations in the RF power amplifier stage of a transmitter may be found:

A at high or low frequencies
B on harmonic frequencies
C at high frequencies only
D at low frequencies only

B-008-003-011

Transmitter RF amplifiers can generate parasitic oscillations:

A on the transmitter fundamental frequency
B on harmonics of the transmitter frequency
C above or below the transmitter frequency
D on VHF frequencies only

B-008-004-001

If a neighbour reports television interference on one or two channels only when you transmit on 15 metres, what is probably the cause of the interference?

A Too much low pass filtering on the transmitter
B Harmonic radiation from your transmitter
C De ionization of the ionosphere near your neighbour's TV antenna
D TV receiver front-end overload

B-008-004-002

What is meant by harmonic radiation?

A Unwanted signals at frequencies which are multiples of the fundamental (chosen) frequency
B Unwanted signals that are combined with a 60-Hz hum
C Unwanted signals caused by sympathetic vibrations from a nearby transmitter
D Signals which cause skip propagation to occur

B-008-004-003

Why is harmonic radiation from an amateur station not wanted?

A It may cause interference to other stations and may result in out-of-band signals
B It uses large amounts of electric power
C It may cause sympathetic vibrations in nearby transmitters
D It may cause auroras in the air

B-008-004-004

What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?

A Harmonic radiation
B Parasitic excitation
C Intermodulation
D Auroral distortion

B-008-004-005

If you are told your station was heard on 21 375 kHz, but at the time you were operating on 7125 kHz, what is one reason this could happen?

A Your transmitter's power-supply filter capacitor was bad
B Your transmitter was radiating harmonic signals
C Your transmitter's power-supply filter choke was bad
D You were sending CW too fast

B-008-004-006

What causes splatter interference?

A Keying a transmitter too fast
B Signals from a transmitter's output circuit are being sent back to its input circuit
C The transmitting antenna is the wrong length
D Overmodulating a transmitter

B-008-004-007

Your amateur radio transmitter appears to be creating interference to the television on channel 3 (60-66 MHz) when you are transmitting on the 15 metre band. Other channels are not affected. The most likely cause is:

A harmonic radiation from the transmitter
B no high-pass filter on the TV
C a bad ground at the transmitter
D front-end overload of the TV

B-008-004-008

One possible cause of TV interference by harmonics from an SSB transmitter is from "flat topping" - driving the power amplifier into non-linear operation. The most appropriate remedy for this is:

A retune transmitter output
B use another antenna
C reduce oscillator output
D reduce microphone gain

B-008-004-009

In a transmitter, excessive harmonics are produced by:

A resonant circuits
B a linear amplifier
C overdriven stages
D low SWR

B-008-004-010

An interfering signal from a transmitter is found to have a frequency of 57 MHz (TV Channel 2 is 54 - 60 MHz). This signal could be the:

A second harmonic of a 10 metre transmission
B crystal oscillator operating on its fundamental
C seventh harmonic of an 80 metre transmission
D third harmonic of a 15 metre transmission

B-008-004-011

Harmonics may be produced in the RF power amplifier of a transmitter if:

A modulation is applied to a high-level stage
B excessive drive signal is applied to it
C the output tank circuit is tuned to the fundamental frequency
D the oscillator frequency is unstable

B-008-005-001

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

A A high pass filter
B A CW filter
C A low pass filter
D A key-click filter

B-008-005-002

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

A To reduce fundamental radiation
B To reduce low frequency interference to other amateurs
C To reduce RF energy below a cut-off point
D To reduce harmonic radiation

B-008-005-003

What circuit blocks RF energy above and below a certain limit?

A An input filter
B A low pass filter
C A band pass filter
D A high pass filter

B-008-005-004

What should be the impedance of a low pass filter as compared to the impedance of the transmission line into which it is inserted?

A Twice the transmission line impedance
B Substantially higher
C About the same
D Substantially lower

B-008-005-005

In order to reduce the harmonic output of a high frequency (HF) transmitter, which of the following filters should be installed at the transmitter?

A Key click
B High pass
C Rejection
D Low pass

B-008-005-006

To reduce harmonic output from a high frequency transmitter, you would put a _____ in the transmission line as close to the transmitter as possible.

A high pass filter
B band reject filter
C wave trap
D low pass filter

B-008-005-007

To reduce energy from an HF transmitter getting into a television set, you would place a _____ as close to the TV as possible.

A band reject filter
B high pass filter
C low pass filter
D wave trap

B-008-005-008

A band pass filter will:

A allow only certain frequencies through
B attenuate high frequencies but not low
C pass frequencies each side of a band
D stop frequencies in a certain band

B-008-005-009

A band reject filter will:

A allow only two frequencies through
B pass frequencies below 100 MHz
C stop frequencies each side of a band
D pass frequencies each side of a band

B-008-005-010

A high pass filter would normally be fitted:

A at the Morse key or keying relay in a transmitter
B between transmitter output and transmission line
C at the antenna terminals of the TV receiver
D between microphone and speech amplifier

B-008-005-011

A low pass filter suitable for a high frequency transmitter would:

A attenuate frequencies below 30 MHz
B pass audio frequencies below 3 kHz
C attenuate frequencies above 30 MHz
D pass audio frequencies above 3 kHz