RIC-7 – 2014

Revised 2014.08.06

Below is a revised version of RIC-7integrated with the *Canadian Amateur Radio Basic Qualification Study Guide* published by Coax Publications . It includes all the questions of the new version of RIC-7 released in February 2014. Refer to the following question to see how this works:

B-001-001-001

RIC-3

Authority to make "Radiocommunication Regulations" is derived from:
the Radiocommunication Act

1) the Radiocommunication Act
2) the General Radio Regulations
3) Standards for the Operation of Radio Stations in the Amateur Radio Service
4) the ITU Radio Regulations

<1>

A. Just below the question number you will find the section of the study guide or the IC document (RIC-3,RIC-9,RBR-4, Safety Code 6, EMCAB-2) where you will find the answer. When you find the answer you might find it helpful to use a highlighter to block off the appropriate text.

B. For convenience we have numbered the answers.

C. We have indicated the correct answer for a question by enclosing it inside < >.

All new questions have NEW in brackets after the question number. Use the CTRL-F function to locate them. When preparing the questions for this download we found some answers where we disagree with the answer provided by IC. We have included our reasons for this. IC has been notified and we expect that newer question bank downloads from them will be corrected.

Many of the questions on regulations in RIC-7 are derived from IC documents mentioned above, which you can download from the Coax Publications Student Success Pages. Others rely on common sense to figure out the correct answer. For some, despite our best efforts to show you where to find the correct answer, there is no source such as the IC documents quoted above. You simply have to memorize the answer!

ITU REGIONS

The International Telecommunication Union (ITU), in its International Radio Regulations, divides the world into three **ITU regions** for the purposes of managing the global radio spectrum. Each region has its own set of frequency allocations, the primary reason for defining the regions.

- **Region 1** comprises Europe, Africa, the Middle East west of the Persian Gulf including Iraq, the former Soviet Union and Mongolia.
  - The western boundary is defined by Line B.
- **Region 2** covers the Americas, which includes Canada, Greenland and some of the eastern Pacific Islands.
  - The eastern boundary is defined by Line B.
- **Region 3** contains most of non-former-Soviet-Union Asia, east of and including Iran, and most of Oceania.

Line B is a line running from the North Pole along meridian 10° West of Greenwich to its intersection with parallel 72° North; thence by great circle arc to the intersection of meridian 50° West and parallel 40° North; thence by great circle arc to the intersection of meridian 20° West and parallel 10° South; thence along meridian 20° West to the South Pole.

Radio communications worldwide are regulated cooperatively by the *ITU*, the *International Telecommunications Union*, a branch of the United Nations. All sovereign countries have the right to be represented there and to have their opinion considered when new regulations or changes are being considered. Canada is represented on most working committees. A subset of a region are the countries within a region. So if one is operating outside of Canada one must follow not only the ITU regulations but those of the country you are visiting.

B-001-020-005

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See above

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

1) American Radio Relay League
2) International Telecommunication Union
3) Radio Amateurs of Canada Inc.
4) International Amateur Radio Union

<2>

B-001-021-001

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See above

In which International Telecommunication Union Region is Canada?

1) Region 4
2) Region 3
3) Region 2
4) Region 1

<3>

B-001-021-002

The International Telecommunication Union (ITU), in its International Radio Regulations, divides the world into three **ITU regions** for the purposes of managing the global radio spectrum. Canada is in Region 2.

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RIC-3 – Sec. 5.1

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

1) Those applicable to US radio amateurs
2) ITU Region 2
3) ITU Region 3
4) ITU Region 1

<1>

A subset of a region are the countries within a region. So if one is operating outside of Canada one must follow not only the ITU regulations but those of the country you are visiting.

B-001-021-003

****

RIC-3 – Sec. 5.1

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

1) Those applicable to Canadian radio amateurs
2) ITU Region 1
3) Those applicable to US radio amateurs
4) ITU Region 2

<3>

A subset of a region are the countries within a region. So if one is operating outside of Canada one must follow not only the ITU regulations but those of the country you are visiting. At this distance one is still considered to be in US waters.

B-001-021-004

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See notes above

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

1) Region 4
2) Region 2
3) Region 3
4) Region 1

<3>

See map above

B-001-021-005

****

See notes above

Canada is location in ITU Region:

1) region 1
2) region 2
3) region 3
4) region 4

<2>

See map above

B-001-001-001

****

RIC-3

Authority to make "Radiocommunication Regulations" is derived from:

1. the Radiocommunication Act
2. the General Radio Regulations
3. the Standards for the Operation of Radio Stations in the Amateur Radio Service
4. The ITU Radio Regulations <1>

B-001-001-002

****

RIC-3

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

1. the General Radio Regulations
2. the Radiocommunication Act
3. the Standards for the Operation of Radio Stations in the Amateur Radio Service
4. the ITU Radio Regulations

<2>

B-001-001-003
****

17.1
The Department that is responsible for the administration of the Radiocommunication Act is:

1. Transport Canada
2. Industry Canada
3. Communications Canada
4. National Defense

<2>

B-001-001-004
****

17.1 – RBR-4 – Sec. 1
The "amateur radio service" is defined in:

1. the Radiocommunication Act
2. the Standards for the Operation of Radio Stations in the Amateur Radio Service
3. the General Radio Regulations
4. the Radiocommunication Regulations

<4>

B-001-002-001
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17.1 – RBR-4 – Sec. 15
What must you do to notify your mailing address changes?

1. Telephone your local club, and give them your new address
2. Contact an accredited examiner and provide details of your address change
3. Contact Industry Canada and provide details of your address change
4. Write amateur organizations advising them of your new address, enclosing your licence

<3>

B-001-002-002
****

An Amateur Radio Operator Certificate is valid for:

1) five years
2) three years
3) one year
4) for life

<4>

B-001-002-003

****

RBR-4 – Sec. 15

Whenever a change of address is made:

1) Industry Canada must be notified within 14 days of operation at the new address
2) the station shall not be operated until a change of address card is forwarded to Industry Canada
3) Industry Canada must be advised of any change in postal address
4) within the same province there is no need to notify Industry Canada

<3>

B-001-002-004

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The Amateur Radio Operator Certificate:

1) must be put on file
2) must be kept in a safe place
3) must be retained at the station
4) must be kept on the person to whom it is issued

<3>

B-001-002-005

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17.1 – RIC-3 – Sec. 38

The holder of a radio authorization shall, at the request of a duly appointed radio inspector, show the radio authorization, or a copy thereof, to the inspector, within ____hours after the request:

1) 48
2) 12
3) 24
4) 72

<1>

B-001-002-006

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The fee for an Amateur Radio Operator Certificate is:

1. free
2. $32
3. $10
4. $24

<1>

B-001-002-007
****

The Amateur Radio Operator Certificate should be:

1. retained in a safety deposit box
2. retained on the radio amateur's person
3. retained in the radio amateur's vehicle
4. retained at the address notified to Industry Canada

<4>

B-001-003-001
****

Out of amateur band transmissions:

1. must be identified with your call sign
2. are permitted
3. are prohibited - penalties could be assessed to the control operator
4. are permitted for short tests only

<3>

B-001-003-002
****

12.16

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

1) A traditional greeting in May
2) An emergency test transmission
3) Nothing special: "MAYDAY" has no meaning in an emergency
4) False or deceptive signals
5)

<4>

B-001-003-003
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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:

1) a fine, not exceeding $5 000, or a prison term of one year, or both *
2) a fine of $10 000
3) a prison term of two years
4) a fine of $1 000

<1>

B-001-003-004
****

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

1. The Radiocommunication Act
2. the Standards for the Operation of Radio Stations in the Amateur Radio Service
3. the General Radio Regulations
4. the Radiocommunication Regulations

<1>

B-001-003-005
****

Which of the following is NOT correct?
The Minister may suspend a radio authorization:

1) where the holder has contravened the Act, the Regulations, or the terms and conditions of the authorization
2) where the radio authorization was obtained through misrepresentation
3) with no notice, or opportunity to make representation thereto
4) where the holder has failed to comply with a request to pay fees or interest due

<3>

B-001-003-006
****

Which of the following statements is NOT correct?

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

<2>

B-001-003-007
****

17.1

The Minister may suspend or revoke a radio authorization WITHOUT NOTICE:

1) where the radio authorization was obtained through misrepresentation
2) where the holder has contravened the Act or Regulations
3) where the holder has contravened the terms and conditions of the authorization
4) where the holder has failed to comply with a request to pay fees or interest due

<4>

B-001-004-001
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17.1 – RIC-3 – Sec. 4.1

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

1. 70 years or younger
2. 18 years or older
3. There are no age limits
4. 14 years or older

<3>

B-001-004-002
****

17.1 – RIC-3 Sec.42

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

1) Basic
2) 12 w.p.m.
3) 5 w.p.m.
4) Advanced

<1>

B-001-004-003 (NEW)
****

B-001-004-003

RIC-3 – Sec.1.2

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

1) Canadian Radiocommunication Operator General Certificate Maritime (RGMC)
2) Canadian Restricted Operator Certificate – Maritime (ROC-M)
3) Canadian Restricted Operator's Certificate – Maritime Commercial (RIC-MC)
4) Canadian Restricted Operator Certificate – Aeronautical (ROC-A)

<1>

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:

1) 12 w.p.m. after passing the Advanced
2) 5 w.p.m. after passing the 12 w.p.m.
3) Advanced after the 5 w.p.m.
4) any order

<4>

B-001-004-005 (NEW)
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RIC-3 S2.2

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

1. 7 w.p.m.
2. 15 w.p.m.
3. 12 w.p.m
4. 5 w.p.m.

<4>

B-001-004-006 (NEW)
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The holder of an Amateur Radio Operator Certificate with the Basic Qualification is authorized to operate following stations:

1. a station authorized in the aeronautical service
2. a station authorized in the maritime service
3. any authorized station except stations authorized in the amateur, aeronautical or maritime services
4. a station authorized in the amateur service

<4>

The obvious answer is #4.

B-001-005-001
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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:

1) if the other person is the holder of a radio authorization to operate in the amateur radio service
2) pending the granting of a radio authorization, if the apparatus covers the amateur and commercial frequency bands
3) pending the granting of a radio authorization, if the apparatus covers the amateur frequency bands only
4) if the transmitter of a station, for which a radio authorization is to be applied for, is type approved and crystal controlled

<1>

The privileges of the Advanced Qualification extend **only** to the Amateur Radio Service. The word "pending" negates #2.

B-001-005-002
****

RIC-3 – S1.4

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

1) Advanced qualification
2) Morse code
3) 12 w.p.m. qualification Morse code
4) 5 w.p.m. qualification Basic qualification

<1>

B-001-005-003

****

RIC-3 - S1.4

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:

1) install an amateur station, but not operate or permit the operation of the apparatus
2) install and operate the radio apparatus, using your own call sign
3) modify and repair the radio apparatus but not install it
4) **not** install, place in operation, modify, repair, maintain, or permit the operation of the radio apparatus

<4>

The key words are **repair and modify**

B-001-005-004

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A radio amateur with Basic and 12 w.p.m. Morse qualifications may install an amateur station for another person:

1) only if the other person is the holder of a valid Amateur Radio Operator Certificate
2) only if the final power input does not exceed 100 watts
3) only if the station is for use on one of the VHF bands
4) only if the DC power input to the final stage does not exceed 200 watts

<1>

2,3, and 4 are red herrings.

B-001-006-001

****

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

1) must be licensed at all locations
2) must be licensed in built-up areas only
3) must be licensed in isolated areas only
4) is exempt from licensing

<1>

B-001-006-002 (NEW)

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An amateur station may be used to communicate with:

1) any stations which are identified for special contests
2) armed forces stations during special contests and training exercises
3) stations operated under similar authorizations
4) any station transmitting in the amateur bands

<3>

Cannot be #1 if you do not have HF privileges and the contest station is on 20 metres. Cannot be #2 as the armed forces do not operate on the amateurs bands. Cannot be #4 for the same reason #1 is wrong.

B-001-006-003 (NEW)

****

Which of the following statements is NOT correct?

1. A considerate radio amateur does not transmit superfluous signals
2. A courteous radio amateur refrains from using offensive language.
3. A radio amateur may not operate, or permit to be operated, a radio apparatus which he knows is not performing to the Radiocommunication Regulations
4. A radio amateur may use his linear amplifier to amplify the output of a license-exempt transmitter outside of any amateur radio allocations

<4>

#4 is the best answer. If you hold an Amateur Radio certificate it authorizes you to transmit on specific frequencies. To transmit on frequencies for which you do not have authrorization is breaking the law.

B-001-006-004 (NEW)

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RIC-3

Which of the following statements is NOT correct?

1) A radio amateur many not operate or permit to be operated a radio apparatus which he know is not performing to the Radiocommunication Regulations tolerances
2) An amateur radio operator transmitting unnecessary or offensive signals does not violate accepted practice.
3) 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
4) Except for a certified radio amateur operating with authorized amateur radio allocations, no person shall possess or operate any device for the purpose of amplifying the output power of a license-exempt radio apparatus

<2>

Sending unnecessary transmissions, especially without identifying yourself every 30 minutes, is a violation of the law. #2 makes best sense.

B-001-006-005

****

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

1. on aeronautical, marine or land mobile frequencies
2. only where the person complies with the Standards for the Operation of Radio Stations in the Amateur Radio Service
3. only where the apparatus is maintained within the performance standards set by Industry Canada regulations and policies
4. except for the amplification of the output power of license-exempt radio apparatus outside authorized frequencies

<1>

#1. You are licensed ONLY for the frequencies assigned to the Amateur Service.

B-001-006-006 (NEW)

****

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

1) The equipment has an RF output of 2 watts or less.

2) The equipment is used in remote areas north of 60 degrees latitude.

3) The radio is certified under the proper Radio Standards Specification for use in Canada and is licensed by Industry Canada on the specified frequencies.

4) The radio operator has Restricted Operator's Certificate.

<3>

You can wade through RSS -119 — Radio Transmitters and Receivers Operating in the Land Mobile and Fixed Services in the Frequency Range 27.41-960 MHz, but it all boils down to Answer #3.

B-001-007-001

****

RIC-3 – Sec.47

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

1) Recreation planning
2) Code practice planning
3) Emergency planning
4) Business planning

<4>

B-001-007-002

****

RIC-3 – Sec. 47

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

1) Never
2) Only when the operator is being paid
3) Only when broadcasts last less than 1 hour
4) Only when broadcasts last longer than 15 minutes

<1>

B-001-007-003

****

RIC-3 – Sec. 6

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

1. Never
2. When operating a beacon transmitter in a "fox hunt" exercise
3. When playing a harmless "practical joke"
4. When you need to hide the meaning of a message for secrecy

<1>

B-001-007-004

****

RIC-3 – Sec.47

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

1) Broadcasts intended for the general public
2) Telecommands to model craft
3) Brief transmissions to make adjustments to the station
4) Morse code practice

<1>

B-001-007-005 (NEW)

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RIC-3 – Sec. 47

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

1) When it is used for commercial traffic.
2) When it includes sending the amateur's call sign.
3) When the encoding technique is published in the public domain.
4) When it is used for music streaming content.

<3>

B-001-007-006 (NEW)

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RIC-3 – Sec.47

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

1. During a declared communications emergency
2. During contests
3. Only when the encoding or cipher is not secret
4. When transmitting above 450 MHz

<3>

B-001-007-007

****

12.2, 12.3, 12.6

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

1) There are no restrictions
2) They are not permitted because they obscure the meaning of a message to government monitoring stations
3) Only "10 codes" are permitted
4) They may be used if the signals do not obscure the meaning of a message

<4>

See Chapter 12 for CW and voice procedure.

B-001-007-008

****

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

1) Turn up the volume of your transmitter
2) Speak closer to the microphone to increase your signal strength
3) Adjust your transceiver noise blanker
4) Turn down the volume of background audio *

<4>

Just common sense!

B-001-007-009

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RIC-3 – Sec. 47

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

1) is permitted for contests
2) must be approved by Industry Canada
3) is not permitted
4) is permitted for third-part traffic

<3>

B-001-007-010

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RIC-3 – Sec. 47

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

1. programming that originates from a broadcasting undertaking
2. Q signals
3. radiocommunication in support of industrial, business, or professional activities

commercially recorded material

<2>

B-001-007-011 (NEW)

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RIC-3 – Sec. 47

In the amateur radio service, business communications:

1) are only permitted if they for the safety of life or immediate protection of property
2) are not prohibited by regulation
3) are not permitted under any circumstance
4) are permitted on some bands

<3>

B-001-008-001

****

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

1) anywhere in Canada
2) anywhere in Canada during times of emergency
3) only at the address shown on Industry Canada records
4) anywhere in your call sign prefix area

<1>

B-001-008-002

********** *

6.12

Which type of station may transmit one-way communications?

1) Beacon station
2) Repeater station
3) HF station
4) VHF station

<1>

B-001-008-003

********** *

Amateur radio operators may install or operate radio apparatus:

1. at any location in Canada
2. only at the address which is on record at Industry Canada
3. at the address which is on record at Industry Canada and at one other location
4. at the address which is on record at Industry Canada and in two mobiles

<1>

B-001-008-004

********** *

11.4, RIC-3 – Sec. 1.

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 these qualifications:

1. Basic and 12 w.p.m. Morse qualifications
2. Basic and Advanced qualifications
3. Basic Qualification
4. Basic and 5 w.p.m. Morse qualifications

<2>

B-001-008-005
********** *

RIC-3 – Sec. 1.4

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:

1) Basic and Advanced
2) Basic, Advanced and 5 w.p.m.
3) Basic
4) Basic, Advanced, and 12 w.p.m.

<1>

B-001-008-006
********** *

RIC-3 – Sec. 1.4

In order to install or operate a transmitter or RF amplifier that is not commercially manufactured for use in the amateur service, a radio amateur must hold an Amateur Operator's Certificate, with a minimum of which qualifications?

1) Basic, Advanced and Morse
2) Basic, and 12 w.p.m.
3) Basic, Advanced and 5 w.p.m.
4) Basic and Advanced

<4>

B-001-009-001
********** *

RIC-3 – Sec. 1.5

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

1. Only the station owner who is the holder of an Amateur Radio Operator Certificate
2. Both the control operator and the station licensee
3. The person who owns the station equipment
4. Only the control operator

<2>

B-001-009-002
********** *

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

1. You, the control operator
2. Both of you
3. The station owner, unless the station records show that you were the control operator at the time
4. The station owner

<2>

B-001-009-003
****

What is your responsibility as a station owner?

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

<4>

B-001-009-004
********** *

Who may be the control operator of an amateur station?

1) Any person over 21 years of age with a Basic Qualification
2) Any qualified amateur chosen by the station owner
3) Any person over 21 years of age with Basic and 12 w.p.m. qualifications
4) Any person over 21 years of age

<2>

B-001-009-005
********** *

When must an amateur station have a control operator?

1)A control operator is not needed
2)Whenever the station receiver is operated
3)Whenever the station is transmitting
4)Only when training another amateur

<3>

B-001-009-006
********** *

When a station is transmitting, where must the control operator be?

1) Anywhere in the same building as the transmitter
2) At the station's entrance, to control entry to the room
3) Anywhere within 50 km of the station location
4) At the station control point

<4>

B-001-009-007
****

17.1

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

1. They must not use your equipment without your permission
2. They must first know how to use the right abbreviations and Q signals
3. They must first know the right frequencies and emissions for transmitting
4. They must hold suitable amateur radio qualifications before they are allowed to be control operators

<4>

B-001-009-008
********** *

RIC-3 – Sec. 1.5
The owner of an amateur station may:

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

<3>

B-001-009-009
********** *

RIC-3 – Sec. 1.5
Which of the following statements is CORRECT?

1. A person, holding only Basic Qualification, may operate another station on 14.2 MHz
2. A radio amateur may permit any person to operate the station without supervision
3. Any person may operate an amateur station under supervision, and in the presence of, a person holding appropriate qualifications
4. Any person may operate a station in the amateur radio service

<3>

B-001-010-001
********** *

RBR-4 – Sec.8,
What is a transmission called that disturbs other communications?
1) Harmful interference
2) Interrupted CW
3) Transponder signals
4) Unidentified transmissions
<1>

B-001-010-002
********** *

RBR-4 – Sec. 8
When may you deliberately interfere with another station's communications?

1) N e v e r
2) Only if the station is operating illegally2
3) Only if the station begins transmitting on a frequency you are using
4) You may expect, and cause, deliberate interference because it can't be helped during crowded band conditions

<1>

B-001-010-003
********** *

5.6

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?

1) Amateurs are allowed to use the frequency band only if they do not cause interference to primary users
2) Nothing special: all users of a frequency band have equal rights to operate
3) Amateurs are only allowed to use the frequency band during emergencies
4) Amateurs must increase transmitter power to overcome any interference caused by primary users

<1>

B-001-010-004
********** *

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

1) Both station operators have an equal right to operate on the frequency
2) The station operator with a lesser class of licence must yield the frequency to a higher-class licensee
3) The station operator with a lower power output must yield the frequency to the station with a higher power output
4) Station operators in ITU Regions 1 and 3 must yield the frequency to stations in ITU Region 2

<1>

B-001-010-005
********** *

RBR-4 – Sec. 8

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

1) Intentional interference
2) Adjacent interference
3) Disruptive interference
4) Harmful interference

<4>

B-001-010-006
********** *

RBR-4 Sec. 8

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

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

<3>

B-001-010-007

********** *

5.6

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

1) 7.0 to 7.1 MHz
2) 144.0 to 148.0 MHz
3) 430.0 to 450.0 MHz
4) 14.0 to 14.2

<3>

Amateurs are secondary users on the 430 – 450 MHz band.

B-001-010-008

********** *

5.6

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

1)144 to 148 MHz
2) 220 to 225 MHz
3)50 to 54 MHz
4) 902 to 928 MHz

<4>

Amateurs are secondary users on 902-928 MHz band. This is the “home” of baby monitors and wireless poer meters used by your local electrical utility!

B-001-010-009

********** *

RBR-4- Sec.8

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

1)shall not cause harmful interference to a station in another service which has primary use of that band
2)may conduct technical experiments using the station apparatus
3)may make trials or tests, even though there is a possibility of interfering with other stations
4)may make trials or tests, except under circumstances that preclude the possibility of interference with other stations

<3>

B-001-010-010(NEW)

RBR-4

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

1) 3.5 to 4.0 MHz
2) 430 to 450 MHz
3) 144 to 148 MHz
4) 902 to 928 MHz

<4>

902 – 928 MHz is used by cordless phones, wireless electric meters and baby monitors. These are typical licence exempt devices

B-001010-011 (NEW)

RBR-4
The amateur radio service is authorized to share a portion of what Industrial Scientific Medical (ISM) bands that is heavily used by licence exempt devices?

1) 2300 to 2450 MHz
2) 430 to 450 MHz
3) 144 to 148 MHz
4) 902 to 928 MHz

<1>

2300 – 2450 MHz, the ISM band is shared with Amateurs. If you operate in this band you may have to contend with interference from licence exempt devices used for industrial, scientific, and medical purposes.

B-001-011-001

********** *

17.1

Amateur radio stations may communicate:

1) with anyone who uses international Morse code
2) with non amateur stations
3) with any station involved in a real or simulated emergency
4) only with other amateur stations

<3>

B-001-011-002 (NEW)

********** *

RIC-3 – Sec. 47

In the amateur radio service, business communications:

1. are permitted on some bands
2. never
3. are only permitted if they are for the safety of life or immediate protection of property
4. are not prohibited by regulation

<2>

B-001-011-003

********** *

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

1. you may offer assistance using international Morse code only
2. you may offer assistance after contacting Industry Canada for permission to do so
3. you should offer assistance
4. you may not offer assistance

<3>

B-001-011-004
********** *

RIC-3 – Sec.47

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

1. music
2. commercially recorded material
3. programming that originates from a broadcast undertaking
4. radio communications required for the immediate safety of life of individuals or the immediate protection of property

<4>

B-001-011-005
********** *

An amateur radio station in distress may:

1. only use radiocommunication bands for which the operator is qualified to use
2. use any means of radiocommunication, but only on internationally recognized emergency channels
3. any means of radiocommunication
4. only Morse code communications on internationally recognized emergency channels

<3>

B-001-011-006
********** *

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

1) Never: only official emergency stations may transmit in a disaster
2) When normal communication systems are overloaded, damaged or disrupted
3) When normal communication systems are working but are not convenient
4) Only when the local emergency net is activated

<2>

B-001-011-007
********** *

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

1. 1000 watts PEP during daylight hours, reduced to 200 watts PEP during the night
2. 1500 watts PEP
3. There are no limitations during an emergency
4. 200 watts PEP

<3>

B-001-011-008
********** *

During a disaster:

1. use only frequencies in the 80 metre band
2. use only frequencies in the 40 metre band
3. use any United Nations approved frequency
4. 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

<4>

B-001-011-009
********** *

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

1) using Morse code
2) only when Industry Canada has issued a special authorization
3) only on the 7 and 14 MHz band
4) during peace time and civil emergencies and exercises

<4>

B-001-011-010
********** *

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

1. the other station is not operating according to the Radiocommunication Regulation
2. you both wish to contact the same station
3. the other station is interfering with your transmission
4. your station is directly involved with a distress situation

<4>

B-001-012-001
********** *

RIC-3 – Sec.49

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

1) Donation of amateur equipment
2) Donation of equipment repairs
3) No payment of any kind is allowed
4) Any amount agreed upon in advance

<3>

B-001-012-002
********** *

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

1) if transmitted by any station using the international Morse code
2) if it is transmitted by an amateur station
3) if transmitted in English or French
4) during peacetime civil emergencies

<2>

B-001-012-003
********** *

RIC-3 – Sec.49

The operator of an amateur station:

1) shall charge no less than $10 for each message that the person transmits or receives
2) shall charge no more than $10 for each message that the person transmits or receives
3) may accept a gift or gratuity in lieu of remuneration for any message that the person transmits or receives
4) shall not demand or accept remuneration in any form, in respect of a radiocommunication that the person transmits or receives

<4>

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?
1. Where it is to provide information for a journalist
2. Where it is for the purpose of preserving or protecting property, or for the prevention of harm to a person
3. Where it is for the purpose of giving evidence in a criminal or civil proceeding in which persons are required to give evidence
4. Where it is on behalf of Canada, for the purpose of international or national defence or security
<1>

B-001-013-001
********** *

RBR-4 – Schedule IV

Which of the following call signs is a valid Canadian amateur radio call sign? 1) SM2CAN 2) VA3XYZ 3) BY7HY 4) KA9OLS
<2>

B-001-013-002
********** B-

12.4, RBR-3
How often must an amateur station be identified?
1. At least every thirty minutes, and at the beginning and at the end of a contact
2. At the beginning of a contact and at least every thirty minutes after that
3. At least once during each transmission
4. At the beginning and end of each transmission
<1>

B-001-013-003
****

RBR-4 – Sec. 9.1, 9.3

What do you transmit to identify your amateur station?
1. Your "handle"
2. Your first name and your location
3. Your full name
4. Your call sign
<4>

B-001-013-004
****

12.4, RBR-4 – Sec.9.1, 9.3

What identification, if any, is required when two amateur stations begin communications?
1. No identification is required
2. Each station must transmit its own call sign
3. Both stations must transmit both call signs
4. One of the stations must give both stations' call signs
<2>

B-001-013-005
****

12.4, RBR-4 – Sec.9.1, 9.3

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

1) Each station must transmit its own call sign
2) No identification is required
3) One of the stations must transmit both stations' call signs
4) Both stations must transmit both call signs

<1>

B-001-013-006
****

12.4, RBR-4 – Sec.9.1, 9.3

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

1. 20 minutes
2. 15 minutes
3. 30 minutes
4. 10 minutes

<3>

B-001-013-007
****

When may an amateur transmit unidentified communications?

1) Only for brief tests not meant as messages
2) Only if it does not interfere with others
3) Only for two-way or third- party communications
4) Never, except to control a model craft

<4>

B-001-013-008
****

RBR-4 – Sec 9.3

What language may you use when identifying your station?

1. English or French
2. Any language being used for a contact
3. Any language being used for a contact, providing Canada has a third-party communications agreement with that country
4. Any language of a country which is a member of the International Telecommunication Union

<1>

B-001-013-009
****

12.4 - RBR-4 – Sec.9.1, 9.3

The call sign of an amateur station must be transmitted

1. at intervals not greater than three minutes when using voice communications
2. at intervals not greater than ten minutes when using Morse code
3. when requested to do so by the station being called
4. at the beginning and at the end of each exchange of communications and at intervals not greater than 30 minutes

<4>

B-001-013-010
****

12.4 ; RBR-4 – Sec.9.1, 9.3

The call sign of an amateur station must be sent:

1. every minute
2. every 15 minutes
3. at the beginning and end of each exchange of communications, and at least every 30 minutes, while in communications
1. once after initial contact

<3>

B-001-013-011
****

RBR-4 Schedule IV

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

1. VA, VE, VO or VY
2. GA, GE, MO or VQ
3. A, K, N or W
4. EA, EI, RO or UY

<1>

B-001-014-001
********** B

RIC-3 – Sec. 5.3

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?

1. Since you can talk to foreign amateurs, your friend may keep talking as long as you are the control operator
2. Have your friend wait until you find out if Canada has a third-party agreement with the foreign station's government
3. Report the incident to the foreign amateur's government
4. Stop all discussions and quickly sign off

<2>

B-001-014-002
****

17.1 – RIC-3 – Sec. 1.5

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

1. You must key the transmitter and make the station identification
2. You must monitor and supervise the communication only if contacts are made on frequencies below 30 MHz
3. You must continuously monitor and supervise the third party's participation
4. You must monitor and supervise the communication only if contacts are made in countries which have no third party communications

<4>

B-001-014-003
****

17.4

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

1. the amateur station has received written authorization from Industry Canada to pass third party traffic
2. the communication is transmitted by secret code
3. such communications have been authorized by the countries concerned
4. prior remuneration has been received

<3>

B-001-014-004

****

RBR4 – Sec. 6

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

1) when that country has notified the International Telecommunication Union that it objects to such communications
2) without written permission from Industry Canada
3) until he has properly identified his station
4) unless he is passing third- party traffic

<1>

B-001-014-005

****

RBR4 – Sec.6

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

1. English or French is used to identify the station at the end of each transmission
2. the countries concerned have authorized such communications
3. the countries for which the traffic is intended have registered their consent to such communications with the ITU
4. radiotelegraphy is used

<2>

B-001-014-006

****

Amateur third party communications is:

1. the transmission of commercial or secret messages
2. a simultaneous communication between three operators
3. none of these answers
4. the transmission of non- commercial or personal messages to or on behalf of a third party

<4>

B-001-014-007 (NEW)

****

RIC-3 – Sect. 5.3

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

1. internet service is working in the foreign country involved.
2. the foreign administration in a declared state of war
3. satellite communication can be originated in the disaster area
4. specifically prohibited by the foreign administration concerned.

<4>

B-001-014-008 (NEW)
****

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:

1) messages that are handled within a local network
2) messages addressed to points within Canada from the U.S.
3) messages that originate from United States Military Auxiliary Radio System (MARS)
4) all messages originated by Canadian amateur stations

<3>

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:

1. messages that originate from the United States Military Auxiliary Radio System (MARS)
2. all messages originated by Canadian amateur stations
3. messages addressed to points within Canada from the United States
4. messages that are handled within local networks during a simulated emergency exercise

<1>

B-001-014-010
****

RBR-4 – Sec. 5.1

Which of the following is **NOT** correct? While in Canada, the operator of a station licensed by the Government of the United States, must:

1. obtain a Canadian amateur certificate before operating in Canada
2. by adding to the call sign the Canadian call sign prefix for the geographic location of the station
3. by radiotelephone, adding to the call sign the word "mobile" or "portable" or by radiotelegraph adding the oblique character "/"
4. identify with the call sign assigned by the FCC

<1>

B-001-014-011
****

RIC-3 Sec 5.3

Which of the following statements is **NOT** correct? A Canadian radio amateur may:

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

<1>

B-001-015-001

****

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

1) Only the privileges allowed by your qualifications
2) Any privileges allowed by the additional qualifications
3) All the emission privileges of the additional qualifications, but only the frequency privileges of your qualifications
4) All the frequency privileges of the additional qualifications, but only the emission privileges of your qualifications

<1>

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?

1) Any privileges allowed by the additional qualifications
2) All the emission privileges of the additional qualifications, but only the frequency privileges of your qualifications
3) All the frequency privileges of the additional qualifications, but only the emission privileges of your qualifications
4) Only the privileges allowed by your qualifications

<4>

B-001-015-003

****

RBR4 – Schedule I Notes

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

1) You must notify Industry Canada that you intend to operate on the HF bands
2) You must pass a Morse code test
3) You must attend a class to learn about HF communications
4) You must pass a Morse code or Advanced test or attain a mark of 80% on the Basic Qualification test

<4>

B-001-015-004

****

The licensee of an amateur station may operate radio controlled models:

1) if the control transmitter does not exceed 15 kHz of occupied bandwidth
2) on all frequencies above 30 MHz
3) if the frequency used is below 30 MHz
4) if only pulse modulation is used

<2>

B-001-015-005

****

5.6

In Canada, the 7 5/80 metre amateur band corresponds in frequency to:

1) 3.0 to 3.5 MHz
2) 4.0 to 4.5 MHz
3) 4.5 to 5.0 MHz
4) 3.5 to 4.0 MHz

<4>

B-001-015-006
****
5.6

In Canada, the 160 metre amateur band corresponds in frequency to:
1. 1.8 to 2.0 MHz
2. 1.5 to 2.0 MHz
3. 2.0 to 2.25 MHz
4. 2.25 to 2.5 MHz
<1>

B-001-015-007
****
5.6

In Canada, the 40 metre amateur band corresponds in frequency to:
1) 6.5 to 6.8 MHz
2) 6.0 to 6.3 MHz
3) 7.7 to 8.0 MHz
4) 7.0 to 7.3 MHz
<4>

B-001-015-008
****
5.6

In Canada, the 20 meter amateur band corresponds in frequency to:
1. 14.000 to 14.350 MHz
2. 13.500 to 14.000 MHz
3. 15.000 to 15.750 MHz
4. 16.350 to 16.830 MHz
<1>

B-001-015-009
****
5.6

In Canada, the 15 metre amateur band corresponds in frequency to:
1)18.068 to 18.168 MHz
2)14.000 to 14.350 MHz
3)28.000 to 29.700 MHz
4)21.000 to 21.450 MHz
<4>

B-001-015-010
****
5.6

In Canada, the 10 metre amateur band corresponds in frequency to:
1)28.000 to 29.700 MHz
2)24.890 to 24.990 MHz
3)21.000 to 21.450 MHz
4)50.000 to 54.000 MHz
<1>

B-001-015-011
****

5.6

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

1) 50 to 54 MHz only
2) all amateur frequency bands
3) all amateur frequency bands above 30 MHz
4) 50 to 54, 144 to 148, and 220 to 225 MHz only

<3>

B-001-016-001
****

5.6, RBR-4 – page 5

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

1. 20 kHz
2. The total bandwidth shall not exceed that of a single-sideband phone emission
3. The total bandwidth shall not exceed 10 times that of a CW emission
4. 30 kHz

<4>

B-001-016-002
****

5.6, RBR-4 – page 5

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

1) 6 kHz
2) 20 kHz
3) 30 kHz
4) 15 kHz

<2>

B-001-016-003
****

5.6, RBR-4 – page 5

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

1) 6 kHz
2) 15 kHz
3) 20 kHz
4) 30 kHz

<1>

B-001-016-004
****

5.6, RBR-4 – page 5

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

1. 6 kHz
2. 20 kHz
3. 30 kHz
4. 15 kHz

<3>

B-001-016-005

****

5.6, RBR-4 – page 5

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

1. 20 kHz
2. 30 kHz
3. 6 kHz
4. 15 kHz

<2>

B-001-016-006

****

5.6

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

1) 18.068 to 18.168 MHz
2) 10.1 to 10.15 MHz
3) 24.89 to 24.99 MHz
4) 1.8 to 2.0 MHz

<2>

B-001-016-007

****

RBR-4 – page 5, 6.9

Single sideband is not permitted in the band:

1) 18.068 to 18.168 MHz
2) 10.1 to 10.15 MHz
3) 24.89 to 24.99 MHz
4) 7.0 to 7.3 MHz

<2>

B-001-016-008 (NEW)

****

5, RBR-4 – page 5

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

1) Watch the standing wave ratio so as not to damage the transmitter.
2) Ensure that the bandwidth required on either side of the carrier frequency does not fall out of band.
3) Restrict operation to telegraphy
4) Make sure that the emission mode is compatible with agreed band plans.

<2>

In RBR-4 and Chapter 5 there is a table of bands and frequency ranges available for use by Amateur Radio operators in Canada. On said table there is another column of data, labeled Maximum Bandwidth. Let's explore this in concert with the other data in the table. We will use the 20 m band, which covers 14.000 to 14.350 MHz. We refer to 14.000 MHz and 14.350 MHz as the band edges, the lower and higher frequency limits of the band. Operating beyond either one of these is forbidden, but we can operate within the band edges. The trouble comes when we operate close to either band edge. If you were to transmit on 14.348 MHz you could actually in violation of the "regs". Your signal at 14.348 MHz is called the carrier frequency, but as you will see further on, it is actually a complex wave with a frequency that can be as low as 14.345 MHz and as high as 14.351 MHz. This is a warning to you to ensure that the bandwidth required on either side of the carrier frequency does not fall out of band.

B-001-016-009
****

12.10

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

1) AMTOR on 14.08 MHz
2) packet on 10.145 MHz
3) fast-scan television (ATV) on 145 MHz
4) fast-scan television (ATV) on 440 MHz

<3>

B-001-016-010
****

5.6, 12.10

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

1) fast-scan television (ATV) on 14.23 MHz
2) slow-scan television (SSTV) on 14.23 MHz
3) frequency modulation (FM) on 29.6 MHz
4) single-sideband (SSB) on 3.76 MHz

<1>

B-001-016-011
****

6.9 – no SSB on 30m band

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

1) single-sideband (SSB) on 10.12 MHz
2) frequency modulation (FM) on 29.6 MHz
3) Morse radiotelegraphy (CW) on 10.11 MHz
4) packet on 10.148 MHz

<1>

B-001-017-001
****

13.15

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

1) The minimum legal power necessary to communicate
2) 250 watts PEP output
3) 2000 watts PEP output
4) 25 watts PEP output

<1>

B-001-017-002
****

1.4

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

1) 1000 watts DC input
2) 200 watts PEP output
3) 250 W DC input
4) 5 watts PEP output

<3>

B-001-017-003 (NEW)
****

13.15

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

1. At the final amplifier input terminals inside the transmitter or amplifier
2. At the antenna terminals of the transmitter or amplifier
3. On the antenna itself, after the transmission line
4. At the power supply terminals inside the transmitter or amplifier

<2>

In S13.15 you will find the classic procedure for measuring the power output of a transmitter. However standards change and there is a move towards accepting power measurements at the antenna terminals of the transmitter. This is why many SWR meters, that are placed in the transmission path from transmitter to antenna, have a dual function and can serve as a power meter with the flick of a switch.

B-001-017-004
****

13.15

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

1. 1000 watts PEP output for SSB operation
2. 1500 watts PEP output for SSB operation
3. 2000 watts PEP output for SSB operation
4. 560 watts PEP output for SSB operation

<4>

B-001-017-005
****

13.15

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?

1) 1000 watts PEP output
2) 560 watts PEP output
3) 2000 watts PEP output
4) 200 watts PEP output

<2>

B-001-017-006

****

13.15

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:

1) 250 watts
2) 500 watts
3) 1000 watts
4) 750 watts

<3>

B-001-017-007

****

13.15

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:

1) 250 watts
2) 1000 watts
3) 1500 watts
4) 500 watts

<2>

B-001-017-008

****

13.15

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:

1. 2500 watts peak power
2. 1000 watts carrier power for transmitters producing other emissions
3. 560 watts peak-envelope power, for transmitters producing any type of single sideband emission
4. 150 watts peak power

<3>

B-001-017-009

****

13.15

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:

1)1000
2)750
3)250
4)100

<3>

B-001-017-010 (NEW)
****

RBR-4 Sec. 10.1 (b)
Which of the following is the most powerful equipment the holder of a Basic with Honours certificate can legally operate at full power?
1) 100 watts carrier power HF transmitter
2) 200 watts carrier power HF transceiver
3) 600 watts PEP HF linear amplifier
4) 160 watts carrier power VHF amplifier
<4>

This is a sneaky “fine print” question.

B-001-018-001
****

11.4
What kind of amateur station automatically retransmits the signals of other stations?
1) Repeater station
2) Space station
3) Telecommand station
4) Beacon station
<1>

B-001-018-002
****

RBR-4 – Sec. 11
An unmodulated carrier may be transmitted only:
1) if the output to the final RF amplifier is kept under 5W
2) for brief tests on frequencies below 30 MHz
3) when transmitting SSB
4) in frequency bands below 30 MHz
<2>

B-001-018-003
****

RBR-4 – Sec. 11.2
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:
1) 29.7 MHz
2) 50 MHz
3)144 MHz
4) 29.5 MHz
<4>

B-001-018-004
****

5.9

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

1. in the 29.5-29.7 MHz band, when received in a VHF band, from a station operated by a person with only Basic Qualifications in the
2. 50-54 MHz frequency band, when received from a station operated by a person with only Basic Qualification
3. in the 144-0148 MHz frequency band, when received from a station operated by a person with only Basic Qualification
4. in the 21 MHz band, when received in a VHF band, from a station operated by a person with only Basic Qualification

<4>

With only the Basic Qualification, without Honours, one is not permitted to operate below 30 MHz.

B-001-019-001
****

13.8

When operating on frequencies below 148 MHz:

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

<3>

B-001-019-002
****

13.4

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

1) radiotelephony is used
2) DC input power to the anode or collector circuit of the final RF stage is in excess of 250 watts
3) radiotelegraphy is used
4) persons other than the licensee use the station

<1>

B-001-019-003
****

13.4

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

1) resonance
2) antenna power
3) plate voltage
4) overmodulation

<4>

B-001-019-004
****

13.4

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

1. 75 percent
2. 100 percent
3. 50 percent
4. 90 percent

<2>

B-001-019-005
****

11.12

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

1) a DC power meter
2) an overmodulation indicating device
3) a reliable means of determining the operating radio frequency
4) a dummy antenna

<3>

B-001-019-006
****

13.4

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

1. 90 percent
2. 75 percent
3. 50 percent
4. 100 percent

<4>

B-001-020-001
****

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

1) Messages of any type, if the foreign country allows third-party communications with Canada
2) Messages that are not religious, political, or patriotic in nature
3) Messages of a technical nature or personal remarks of relative unimportance
4) Messages of any type

<3>

B-001-020-002
****

The operator of an amateur station shall ensure that:

1) communications are exchanged only with commercial stations
2) all communications are conducted in secret code
3) charges are properly applied to all third-party communications
4) communications are limited to messages of a technical or personal nature

<4>

B-001-020-003
****

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

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

<3>

This is just a re-wording the previous two questions.

B-001-020-004
****

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

1. 1.8 MHz
2. 3.5 MHz
3. 28 MHz
4. none of the above

<4>

CW is no longer required to obtain an amateur radio certificate

B-001-022-001
****

RIC-3 – Sec. 3

Which of these statements is NOT correct?

1) The fee for taking an examination for an Amateur Radio Operator Certificate by an accredited volunteer examiner is to be negotiated
2) The fee for taking an examination for an Amateur Radio Operator Certificate at an Industry Canada office is $5 per qualification
3) An accredited volunteer examiner must hold an Amateur Radio Operator Certificate with Basic, Advanced, and 12 w.p.m. qualifications
4) The fee for taking an examination for an Amateur Radio Operator Certificate at an Industry Canada office is $20 per qualification

<2>

B-001-022-002
****

RIC-3 – Sec. 4.2

Which of the following statements is NOT correct?

1) A disabled candidate, taking a Morse code sending test, may be allowed to recite the examination text in Morse code sounds
2) Examinations for disabled candidates may be given orally, or tailored to the candidate's ability to complete the examination
3) A disabled candidate must pass a normal amateur radio certificate examination before being granted any qualification
4) The fee for taking an amateur radio certificate examination from an accredited volunteer examiner is to be negotiated

<3>

B-001-022-003
****

RIC-3 – Sec. 3.1

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

1. to be negotiated between examiner and candidate
2. always $20 per qualification
3. always free of charge
4. always $20 per visit regardless of the number of examinations

<1>

B-001-022-004
****

17.1- RIC-3 – Sec. 3.2

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

1) $20 per visit, regardless of the number of qualification examinations
2) no charge for qualification examinations
3) $5 per qualification examination
4) $20 per qualification

<4>

B-001-002-005 (NEW)
****

RIC-3, Sec. 4.2,4.3

Which of the following statements is false?

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

<4>

Note: For questions B-001-023-001 to B-001-023-010 you are going to require the IC policy on towers, CPC-2-0-03, which can download from the Coax Publications web site when you log into the Student Success Pages.

B-001-023-001 (NEW)
********** -

CPC-2-0-03, S1.3

Which of these statements about erection of an antenna structure is NOT correct?

1) There is no requirement to receive the prior approval from Industry Canada to construct an antenna or its structure

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

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

4) Prior to an installation, for which community concerns could be raised, radio amateurs must consult with their land-use authority

<2>

B-001-023-002 (NEW)
****

CPC-2-0-03 S1.1

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

1. The majority of neighbours residing within a distance of three times the proposed antenna structure
2. The Minister of Industry (IC)
3. The person planning to use the tower or their spouse
4. The local municipal government

<2>

B-001-023-003 (NEW)
****

CPC-2-0-03 S6

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?

1) When transmitting will only be done at low power
2) When an exclusion criterion defined by Industry Canada applies
3) In a rural area
4) When the structure is part of an amateur radio antenna

<2>

B-001-023-004 (NEW)
****

CPC-2-0-03 S4.2

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 _____

1) must fulfill the public consultation requirements set out in 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.
2) can proceed with their project without public consultation.
3) must implement a consultation process of their own design
4) must wait for the land use authority to develop a public consultation process

<1>

B-001-023-005 (NEW)
****

CPC-2-0-03 S4.2

Which is not an element of the Industry Canada Public Consultation Process for antenna systems?
1) Providing written notice
2) Addressing relevant questions, comments and concerns
3) Providing an opportunity for the public to respond regarding measures to address reasonable and relevant concerns
4) Participating in public meetings on the project
<4>

B-001-023-006 (NEW)
****

CPC-2-0-03 S4.2

The Default Public Consultation Process for antenna systems requires proponents to address:
1) Comments reported in media reporting on the proposal
2) Opposition to the project
3) Reasonable and relevant concerns provided in writing within the 30 day public comment period
4) All questions, comments and concerns raised
<3>

B-001-023-007 (NEW)
****

CPC-2-0-03 S6
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?
1) Exclusions listed in both CPC-2-0-03 and the Local land use authority process.
2) Exclusions listed in either CPC-2-0-03 or the Local land use authority process.
3) Exclusions listed in the Industry Canada Client Procedures Circular on Radiocommunications and Broadcasting Antenna Systems CPC-2-0-03
4) Exclusions defined in the Local land use authority process.
<2>

B-001-023-008 (NEW)

CPC-2-0-03 S6

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

1) Be postponed until those in dispute reach an agreement
2) Be made by the municipality in which the antenna is built
3) Be made by a majority vote of those residing with a radius of three times the antenna structure height
4) Be made by Industry Canada
<4>

B-001-023-009 (NEW)
****

CPC-2-0-03 S6
In general, what is the tallest amateur radio antenna system excluded from the requirements to consult with the land use authority and the public where there is a land use authority defined public consultation process?

1) 21 m
2) The taller the of the height exclusion of the land use authority public consultation process and Industry Canada's antenna siting procedures
3) 10 m
4) 15 m

<2>

IC says 15 m unless the LUA says you may go a bit higher

B-001-023-010

CPC-2-0-03 S6

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

1. The person planning to erect the antenna structure.
2. The provincial government.
3. The land use authority or municipality
4. Industry Canada

<4>

B-001-024-001

****

16.9

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

1) Canadian Standards Association
2) Environment Canada
3) Transport Canada
4) Health Canada

<4>

B-001-024-002

****

16.9

What is the purpose of the Safety Code 6?

1) It gives RF exposure limits for the human body
2) It lists all RF frequency allocations for interference protection
3) It sets transmitter power limits for interference protection
4) It sets antenna height limits for aircraft protection

<1>

B-001-024-003
****

16.9

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

1) 300 to 3000 MHz
2) 30 to 300 MHz
3) Above 1500 MHz
4) 3 to 30 MHz

<2>

B-001-024-004
****

16.9

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?

1) There are more transmitters operating in this range
2) There are fewer transmitters operating in this range
3) Most transmissions in this range are for a longer time
4) The human body absorbs RF energy the most in this range

<4>

B-001-024-005
********** B-

16.9

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

1) 10 watts
2) not specified - the exemption for portable equipment was withdrawn in 1999
3) 25 watts
4) 125 milliwatts

<2>

B-001-024-006
****

16.9

Which of the following statements is **NOT** correct?

1) Maximum exposure levels of RF fields to the general population, in the frequency range 10 to 300 MHz, is 28 \TRMS/metre (E-field)
2) Permissible exposure levels of RF fields increases as frequency is increased above 300 MHz
3) Permissible exposure levels of RF fields increases as frequency is decreased below 10 MHz
4) Permissible exposure levels of RF fields decreases as frequency is decreased below 10 MHz

<4>

B-001-024-007 (NEW)
****

16.9

The permissible exposure levels of RF fields:

1) decreases, as frequency is decreased below 10 MHz
2) increases, as frequency is increased above 300 MHz
3) increases, as frequency is increased from 10 MHz to 300 MHz
4) decreases, as frequency is increased above 300 MHz

<2>

B-001-024-008 (NEW)
****

16.9

Which statement is NOT correct:

1) Safety Code 6 specifies lower exposure limits for the general public in uncontrolled areas tan it does for people in controlled areas.
2) Hand held transmitters are excluded from Safety Code 6 requirements
3) Antenna gain, distance, transmitter power and frequency are all factors that influence the electric field strength and a person's exposure to radio energy.
4) Safety Code 6 uses different units for the magnetic field strength and the electric field strength when stating units.

<2>

B-001-024-009(NEW)
****

16.9

Which statement is correct?

1) Safety Code 6 regulates the operation of receivers only
2) the operation of portable transmitting equipment is of no concern in Safety Code 6
3) 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
4) Safety Code 6 sets limits for RF exposure for all radio transmitters regardless of power output.

<4>

B-001-024-010 (NEW)
****

16.9

Which of these statements about Safety Code 6 is false?

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

<2>

For questions B-001-025-001 through B-001-025-004 download IC document EMCAB-2 from the Coax Publications site via the Student Success Pwages. In it IC outlines the criteria to decide who is "right and wrong" when your signal interferes with a neighbour's TV et al. It is a balancing act, the "electromagnetic field" that you are generating versus the ability of your neighbour's electronic device to reject your signal.

B-001-025-001 (NEW)

****

15

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

1) at the transmitting location is below the radio amateur's maximum allowable transmitter power
2) at the transmitting location is above 100 watts
3) near the affected equipment is above Industry Canada's specified immunity criteria
4) on the premises of the affected equipment is below Industry Canada's specified immunity criteria.

<4>

B-001-025-002 (NEW)

****

15

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 if the field strength of the amateur station signal:

1) near the TV is below Industry Canada's specified immunity criteria
2) at the transmitting location is below the radio amateur's maximum allowable transmitter power
3) at the transmitting location is above the radio amateur's allowable transmitter power
4) on the neighbour's premises is above Industry Canada's specified immunity criteria

<4>

B-001-025-003

****

15, 15.1

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"?

1) cable television converters
2) audio and video recorders
3) radio-sensitive equipment
4) broadcast receivers

<3>

B-001-025-004

****

15, 15.1

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?

1) broadcast transmitters
2) broadcast receivers
3) associated equipment
4) radio-sensitive equipment

<1>

B-002-001-001

****

12.4

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

1) Say the other operator's name, then your call sign three times
2) Say the call sign of the station you want to contact, then your call sign
3) Say, "Breaker, breaker,"
4) Say the call sign of the station you want to contact three times

<2>

B-002-001-002

****

12.4

What is the main purpose of a repeater?

1) To link amateur stations with the telephone system
2) To increase the range of portable and mobile stations
3) To retransmit weather information during severe storm warnings
4) To make local information available 24 hours a day

<2>

B-002-001-003 (NEW)

****

5.7

What is frequency coordination on VHF and UHF bands?

1) The selection of simplex frequencies by individual operators
2) A part of the planning before a contest
3) A process that seeks to carefully assign frequencies so as to minimize interference with neighbouring repeaters
4) A band plan modes and frequencies within a band.

<3>

B-002-001-004

****

12.4

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

1. It lets a repeater have a rest period after heavy use
2. It logs repeater transmit time to predict when a repeater will fail
3. It tells how long someone has been using a repeater
4. It limits the amount of time someone can transmit on a repeater

<4>

B-002-001-005

****

12.4

What is a CTCSS (or PL) tone?

1) A tone used by repeaters to mark the end of a transmission
2) A sub-audible tone added to a carrier which may cause a receiver to accept a signal
3) A special signal used for telemetry between amateur space stations and Earth stations
4) A special signal used for telecommand control of model craft

<2>

B-002-001-006

****

12.4

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

1) Say the station's call sign, then identify your own station
2) Say "break, break 79," then say the station's call sign
3) Say "CQ" three times, then say the station's call sign
4) Wait for the station to call "CQ", then answer it

<1>

B-002-001-007

****

12.4

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

1) To check the SWR of the repeater
2) To reach for pencil and paper for third-party communications
3) To dial up the repeater's autopatch
4) To listen for anyone else wanting to use the repeater

<4>

B-002-001-008

****

12.4

Why should you keep transmissions short when using a repeater?

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

<3>

B-002-001-009
****

12.4

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

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

<4>

B-002-001-010
****

12.4

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

1) What is your 20?
2) Where are you?
3) Locations are not normally told by radio
4) 4)What is your 12?

<2>

B-002-001-011
****

12.4

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:

1) 800 kHz
2) 600 kHz
3) 1 000 kHz
4) 400 kHz

<2>

B-002-002-001
****

12.3

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

1. Use any words which start with the same letters as your call sign for each letter of your call
2. Talk louder
3. Turn up your microphone gain
4. Use Standard International Phonetics for each letter of your call sign

<4>

B-002-002-002
****

12.3

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

1) Q signals
2) The Standard International Phonetic Alphabet
3) Unique words of your choice
4) A speech compressor

<2>

B-002-002-003
****

12.3
What is the Standard International Phonetic for the letter A?
1) Alpha 2)Able 3)Adam 4)America
<1>

B-002-002-004
****

12.3
What is the Standard International Phonetic for the letter B?
1) Brazil 2) Bravo 3)Borneo 4) Baker
<2>

B-002-002-005
****

12.3
What is the Standard International Phonetic for the letter D?
1) Dog 2) Denmark 3) David 4) Delta
<4>

B-002-002-006
****

12.3
What is the Standard International Phonetic for the letter E?
1) Easy 2) Edward 3) England 4) Echo
<4>

B-002-002-007
****

12.3
What is the Standard International Phonetic for the letter G?
1) Golf 2) George 3) Germany 4) Gibraltar
<1>

B-002-002-008
****

12.3
What is the Standard International Phonetic for the letter I?
1) Iran 2) Italy 3) India 4) Item
<3>

B-002-002-009
****

12.3
What is the Standard International Phonetic for the letter L?
1) Love 2) London 3)Luxembourg 4)Lima
<4>

B-002-002-010

****

12.3

What is the Standard International Phonetic for the letter P?

1) Portugal 2) Papa 3) Paris 4) Peter

<2>

B-002-002-011

****

12.3

What is the Standard International Phonetic for the letter R?

1) Romeo 2) Roger 3)Radio 4) Romania

<1>

B-002-003-001

****

12.7

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

1) Say "CQ" three times, followed by "this is," followed by your call sign spoken three times
2) Say "CQ" once, followed by "this is," followed by your call sign spoken three times
3) Say "CQ" at least five times, followed by "this is," followed by your call sign spoken once
4) Say "CQ" at least ten times, followed by "this is," followed by your call sign spoken once

<1>

B-002-003-002

****

12.7

How should you answer a voice CQ call?

1) Say the other station's call sign at least five times phonetically, followed by "this is," then your call sign twice
2) Say the other station's call sign once, followed by "this is," then your call sign given phonetically
3) Say the other station's call sign at least three times, followed by "this is," and your call sign at least five times phonetically
4) Say the other station's call sign at least ten times, followed by "this is," then your call sign at least twice

<2>

B-002-003-003

****

12.4

What is simplex operation?

1. Transmitting and receiving over a wide area
2. Transmitting on one frequency and receiving on another
3. Transmitting one-way communications
4. Transmitting and receiving on the same frequency

<4>

B-002-003-004

****

12.4

When should you use simplex operation instead of a repeater?

1. When a contact is possible without using a repeater
2. When the most reliable communications are needed
3. When an emergency telephone call is needed
4. When you are traveling and need some local information

<1>

B-002-003-005

****

12.4

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

1) To minimize interference on HF bands capable of long-distance communication
2) Because greater output power is permitted on VHF and UHF
3) Because HF transmissions are not propagated locally
4) Because signals are louder on VHF and UHF frequencies

<1>

B-002-003-006 (NEW)

****

12.4

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

1. Some frequencies are designated for narrow band FM and others for wideband FM
2. You may inadvertently choose a channel that is an input to a local repeater
3. Interference may be caused to unlicensed devices operating in the same band
4. Implanted medical devices share the same spectrum

<2>

B-002-003-007

****

12.4

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

1. See if a third station can clearly receive both of you
2. See if you can clearly receive a more distant repeater
3. See if you can clearly receive the station on the repeater's input frequency
4. See if you can clearly receive the station on a lower frequency band

<3>

B-002-003-008

****

12.4

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

1. Changing the repeater's frequency is not practical
2. The repeater's output power may ruin your station's receiver
3. There are more repeater operators than simplex operators
4. Changing the repeater's frequency requires the authorization of Industry Canada

<1>

B-002-003-009

****

12.7

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

1) Upper
2) Lower
3) FM
4) Double

<1>

B-002-003-010

****

12.7

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

1. FM
2. Lower
3. Double
4. Upper

<2>

B-002-003-011

****

6.12

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

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

<4>

B-002-004-001
****

12.4

What should you do before you transmit on any frequency?

1. Check your antenna for resonance at the selected frequency
2. Listen to make sure others are not using the frequency
3. Make sure the SWR on your antenna transmission line is high enough
4. Listen to make sure that someone will be able to hear you

<2>

B-002-004-002
****

13.15

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

1) Turn on your speech processor
2) Reduce your SWR
3) Continue with your contact, making no changes
4) Turn down your power output to the minimum necessary

<4>

B-002-004-003
****

11.6

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

1) Use a random wire antenna
2) Tune up on 40 metres first, then switch to the desired band
3) Use twin lead instead of coaxial cable transmission lines
4) Tune the transmitter into a dummy load

<4>

B-002-004-004
****

11.6

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

1) Choose an unoccupied frequency
2) Use a non-resonant antenna
3) Use a resonant antenna that requires no loading-up procedure
4) Use a dummy load

<4>

B-002-004-005
****

11.6

Why would you use a dummy antenna?

1. To give comparative signal reports
2. To allow antenna tuning without causing interference
3. It is faster to tune
4. To reduce output power

<2>

B-002-004-006 (NEW)
****

12.15

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?

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

<1>

B-002-004-007
****

12.15

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

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

<1>

B-002-004-008
****

12.15

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

1. Tell the interfering stations to change frequency, since you were there first
2. Report the interference to your local Amateur Auxiliary Coordinator
3. Increase the output power of your transmitter to overcome the interference
4. Move your contact to another frequency

<4>

B-002-004-009

****

12.15

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?

1. Approximately 3 kHz
2. 150 to 500 Hz
3. Approximately 6 kHz
4. Approximately 10 kHz

<1>

B-002-004-010

****

5.7

What is a band plan?

1) A plan of operating schedules within an amateur band published by Industry Canada
2) A guideline for using different operating modes within an amateur band
3) A plan devised by a club to best use a frequency band during a contest
4) A guideline for deviating from amateur frequency band allocations

<2>

B-002-004-011

****

12.7

Before transmitting, the first thing you should do is:

1) ask if the frequency is occupied
2) make an announcement on the frequency indicating that you intend to make a call
3) decrease your receiver's volume
4) listen carefully so as not to interrupt communications already in progress

<4>

B-002-005-001

****

12.6

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

1)Send the letters "CQ" three times, followed by "DE", followed by your call sign sent once
2)Send the letters "CQ" ten times, followed by "DE", followed by your call sign sent once
3)Send the letters "CQ" over and over
4) Send the letters "CQ" three times, followed by "DE", followed by your call sign sent three times

<4>

B-002-005-002

****

12.6

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

1)Send your call sign four times
2)Send the other station's call sign once, followed by "DE", followed by your call sign four times
3)Send your call sign followed by your name, station location and a signal report
4)Send the other station's call sign twice, followed by "DE", followed by your call sign twice

<4>

B-002-005-003

****

12.6

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

1)At any speed which you can reliably receive
2)At any speed below 5 WPM
3)At the highest speed your keyer will operate
4)At the highest speed at which you can control the keyer
<1>

B-002-005-004

****

12.6

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

1) Calling any station
2) Call on the quarter hour
3) An antenna is being tested
4) Only the station "CQ" should answer

<1>

B-002-005-005

****

12.6

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

1) Received all correctly
2) From
3) Calling any station
4) Directional Emissions

<2>

B-002-005-006 (NEW)

****

12.6

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

1) End of message
2) Any station please reply
3) Called station only transmit
4) All received correctly

<2>

B-002-005-007

****

12.6

What is meant by the term "DX"?

1) Calling any station
2) Distant station
3) Go ahead
4) Best regards

<2>

B-002-005-008

****

12.6

What is the meaning of the term "73"?

1) Long distance
2) Love and kisses
3) Go ahead
4) Best regards

<4>

B-002-005-009

****

11.13

Which of the following describes full break-in telegraphy?

1. Automatic keyers are used to send Morse code instead of hand keys
2. Incoming signals are received between transmitted Morse dots
3. An operator must activate a manual send/receive switch before and after every transmission
4. Breaking stations send the Morse code prosign "BK"

<2>

B-002-005-010

****

12.6

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

1) 150 to 500 Hz
2) 5 to 50 Hz
3) 1 to 3 kHz
4) 3 to 6 kHz

<1>

B-002-005-011

****

12.6

Good Morse telegraphy operators:

1) always give stations a good readability report
2) listen to the frequency to make sure that it is not in use before transmitting
3) save time by leaving out spaces between words
4) tune the transmitter using the operating antenna

<2>

B-002-006-001
****

12.6

What are "RST" signal reports?
1. A short way to describe transmitter power
2. A short way to describe signal reception
3. A short way to describe sunspot activity
4. A short way to describe ionospheric conditions

<2>

B-002-006-002
****

12.6

What does "RST" mean in a signal report?
1. Recovery, signal strength, tempo
2. Recovery, signal speed, tone
3. Readability, signal speed, tempo
4. Readability, signal strength, tone

<4>

B-002-006-003
****

12.6

What is the meaning of: "Your signal report is 5 7"?
1) Your signal is readable with considerable difficulty
2) Your signal is perfectly readable and moderately (fairly) strong
3) Your signal is perfectly readable with near pure tone
4) Your signal is perfectly readable, but weak

<2>

B-002-006-004
****

12.6

What is the meaning of: "Your signal report is 3 3 "?
1) Your signal is unreadable, very weak in strength
2) The station is located at latitude 33 degrees
3) Your signal is readable with considerable difficulty and weak in strength
4) The contact is serial number 33

<3>

B-002-006-005
****

12.6

What is the meaning of: "Your signal report is 5 9 plus 20 dB"?
1. The bandwidth of your signal is 20 decibels above linearity
2. Repeat your transmission on a frequency 20 kHz higher
3. A relative signal-strength meter reading is 20 decibels greater than strength 9
4. Your signal strength has increased by a factor of 100

<3>

B-002-006-006 (NEW)
****

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

1. Signal reports are only useful on simplex
2. The other operator needs to know how well he is received on the repeater, not how well you receive the repeater.
3. The repeater gain affects your S-meter reading
4. You need to listen to the repeater input frequency for an accurate signal report.

<2>

Signal reports on a repeater tend to be anecdotal. Such phrases as "full quieting into the repeater", "solid copy", or "noisy" are used instead.

B-002-006-007
********** B-

A1.7

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

1. Increase by approximately four S units
2. Increase by approximately one S unit
3. Decrease by approximately four S units
4. Decrease by approximately one S unit

<2>

B-002-006-008
********** B-

A1.7

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?

1. Approximately 5 times
2. Approximately 3 times
3. Approximately 4 times
4. Approximately 2 times

<3>

B-002-006-009
********** B-

12.6

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

1) Your signal is perfectly readable, moderately (fairly) strong, and with perfect tone
2) Your signal is perfectly readable, weak strength, and with perfect tone
3) Your signal is fairly readable, fair strength, and with perfect tone
4) Your signal is barely readable, moderately strong, and with faint ripple

<1>

B-002-006-010

****

12.6

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

1) Your signal is very readable, very strong, and with perfect tone
2) Your signal is barely readable, very weak, and with perfect tone
3) Your signal is moderately readable, very weak, and with hum on the tone
4) Your signal is quite readable, fair strength, and with perfect tone

<4>

B-002-006-011

****

12.6

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

1) Your signal is unreadable, and barely perceptible
2) Your signal is 11 dB over S9
3) Your signal is first class in readability and first class in strength
4) Your signal is very readable and very strong

<1>

B-002-007-001

********** B-

12.2

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

1) Interference from static
2) Send "RST" report
3) Radio station location is:
4) Send more slowly

<4>

B-002-007-002

****

12.2

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

1) Stop sending
2) My name is
3) My location is
4) Time here is

<3>

B-002-007-003

****

12.2

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

1) QRL?
2) QRV?
3) QRU?
4) QRZ?

<1>

B-002-007-004

****

12.2

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

1) Use more power
2) Send faster
3) Change frequency
4) Send more slowly

<3>

B-002-007-005 (NEW)

****

12.2

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

1) Your signal is fading
2) I am busy
3) I have no message
4) A contact is confirmed

<1>

B-002-007-006

****

12.2

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

1) QRZ?
2) QSL?
3) QRL?
4) QRT?

<1>

B-002-007-007

****

12.2

The signal "QRM" signifies:

1. I am troubled by static
2. your signals are fading
3. is my transmission being interfered with
4. I am being interfered with

<4>

B-002-007-008

****

12.2

The signal "QRN" means:

1) I am busy
2) are you troubled by static
3) I am being interfered with
4) I am troubled by static

<4>

B-002-007-009
****

12.2

The "Q signal" indicating that you want the other station to send slower is:
1) QRM 2) QRS 3) QRL 4) QRN
<2>

B-002-007-010
****

12.2

"Who is calling me" is denoted by the "Q signal":
1) QRK? 2) QRP? 3) QRZ? 4) QRK?
<4>

B-002-007-011
********** B-

12.2

The "Q signal" which signifies "I will call you again" is:
1) QRX 2) QRZ 3) QRS 4) QRT
<1>

B-002-008-001
********** B-

12.16

When may you use your amateur station to transmit an "SOS" or "MAYDAY"?
1) Never
2) Only at specific times (at 15 and 30 minutes after the hour)
3) Only in case of a severe weather watch
4) In a life-threatening distress situation
<4>

B-002-008-002
****

12.16

If you are in contact with another station and you hear an emergency call for help on your frequency, what should you do?
1. Immediately stop your contact and take the emergency call
2. Tell the calling station that the frequency is in use
3. Direct the calling station to the nearest emergency net frequency
4. Call your local police station and inform them of the emergency call
<1>

B-002-008-003
****

12.16
What is the proper distress call to use when operating phone? "SOS" several times
1. Say
2. Say "EMERGENCY" several times
3. Say "MAYDAY" several times
4. Say "HELP" several times

<3>

B-002-008-004
****

12.16
What is the proper distress call to use when operating CW?
1. CQD
2. Q R R R
3. SOS
4. MAYDAY

<3>

B-002-008-005
****

12.16
What is the proper way to interrupt a repeater conversation to signal a distress call?
1. Break in immediately following the transmission of the active party and state your situation and call sign
2. Say "EMERGENCY" three times
3. Say "SOS" the your call sign
4. Say "help" as many times as it takes to get someone to answer

<1>

B-002-008-006
****

12.16
Why is it a good idea to have a way to operate your amateur station without using commercial AC power lines?
1)So you will comply with rules
2)So you may operate in contests where AC power is not allowed
3)So you may provide communications in an emergency
4)So you may use your station while mobile

<3>

B-002-008-007
****

11.4

What is the most important accessory to have for a hand-held radio in an emergency?
1) Several sets of charged batteries
2) An extra antenna
3) A portable amplifier
4) A microphone headset for hands-free operation
<1>

B-002-008-008
****

8.8

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?
1. A parabolic dish
2. A three-element Yagi
3. A dipole
4. A three-element quad
<3>

B-002-008-009
****

12.16

If you are communicating with another amateur station and hear a station in distress break in, what should you do?
1. Continue your communication because you were on frequency first
2. Change to a different frequency so the station in distress may have a clear channel to call for assistance
3. Immediately cease all transmissions because stations in distress have emergency rights to the frequency
4. Acknowledge the station in distress and determine its location and what assistance may be needed
<4>

B-002-008-010
****

12.16

In order of priority, a distress message comes before:
1) no other messages
2) a government priority message
3) an urgency message
4) a safety message
<3>

B-002-008-011 (NEW)
****

12.16

If you hear distress traffic and are unable to render assistance you should:
1) contact authorities and then maintain watch until you are certain that assistance will be forthcoming
2) enter the details in the log book and take no further action
3) take no action
4) tell all other stations to cease transmitting
<1>

B-002-009-001
****

12.11

What is a "QSL card"?

1) A Notice of Violation from Industry Canada
2) A written proof of communication between two amateurs
3) A postcard reminding you when your station license will expire
4) A letter or postcard from an amateur pen pal

<2>

B-002-009-002
****

12.14

What is an azimuthal map?

1. A map projection centered on the North Pole
2. A map that shows the angle at which an amateur satellite crosses the equator
3. A map that shows the number of degrees longitude that an amateur satellite appears to move westward at the equator
4. A map projection centered on a particular location, used to determine the shortest path between points on the earth's surface

<4>

B-002-009-003
****

12.14

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

1) Mercator
2) Polar projection
3) Topographical
4) Azimuthal

<4>

B-002-009-004
****

12.14

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

1. 45 degrees
2. 90 degrees
3. 270 degrees
4. 180 degrees

<4>

B-002-009-005
****

12.11

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

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

<1>

B-002-009-006
****

12.14

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?

1. Point your antenna toward Newington, CT
2. Point your antenna to the north
3. Point your beam 180 degrees away from that bearing and listen for the stations arriving on the "long-path"
4. Point your antenna to the south

<3>

B-002-009-007
****

12.12

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

1) A log is important for recording contacts for operating awards
2) A logbook is required by Industry Canada
3) A well-kept log preserves your fondest amateur radio memories for years
4) A log is important for handling neighbour interference complaints

<2>

B-002-009-008
****

12.14

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

1. Because it shows the compass bearing from your station to any place on earth, for antenna planning and pointing
2. Because it looks impressive
3. Because it shows the angle at which an amateur satellite crosses the equator
4. Because it shows the number of degrees longitude that an amateur satellite moves west

<1>

B-002-009-009

****

12.13

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

1) Greenwich, England
2) Geneva, Switzerland
3) Ottawa, Canada
4) Newington, CT

<1>

B-002-009-010

****

12.13

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

1. Universal Time Coordinated (formerly Greenwich Mean Time - GMT)
2. Universal Time Constant
3. Unlisted Telephone Call
4. Unlimited Time Capsule

<1>

B- 002-009-011

****

12-013

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

1. A non-directional beacon station
2. Your local television station
3. CHU, WWV or WWVH
4. Your local radio station

<3>

B-003-001-001

****

11.6

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

1) as close as possible to the transceiver output
2) as close as possible to the antenna tuner output
3) as close as possible to the antenna
4) midway between the transceiver and antenna

<1>

B-003-001-002

****

11.6

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

1) as close as possible to the antenna
2) as close as possible to the antenna tuner output
3) as close as possible to the linear amplifier input
4) as close as possible to the linear amplifier output

<4>

B-003-001-003

****

11.6

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

1) Dummy load
2) Low pass filter
3) Antenna switch
4) SWR bridge

<2>

B-003-001-004

****

11.6

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

1) SWR bridge
2) Antenna switch
3) Linear amplifier
4) Dummy load

<1>

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?

1) Transceiver
2) Low pass filter
3) Antenna switch
4) SWR bridge

<3>

B-003-001-006

****

11.6

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

1) Antenna tuner
2) Antenna switch
3) Dummy load
4) SWR bridge

<1>

B-003-001-007
****

11.6

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

1) SWR bridge
2) Low pass filter
3) Antenna tuner
4) Dummy load

<4>

B-003-001-008
****

11.6

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

1) most antennas when operating below 14 MHz
2) most antennas when operating above 14 MHz
3) mono-band Yagi type antennas
4) tri-band Yagi antennas

<1>

B-003-001-009
****

11.6

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

1) with most antennas when operating above 14 MHz
2) to tune into dummy loads
3) to tune low pass filters
4) with most antennas when operating below 14 MHz

<4>

B-003-002-001
****

13.11

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

1. Microphone
2. Modulator
3. power amplifier
4. frequency multiplier

<1>

B-003-002-002
****

13.11

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

1) Modulator
2) power amplifier
3) speech amplifier
4) oscillator

<3>

B-003-002-003
****

13.11

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

1) modulator
2) power amplifier
3) microphone
4) frequency multiplier

<1>

B-003-002-004
****

13.11

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

1) speech amplifier
2) oscillator
3) power amplifier
4) microphone

<2>

B-003-002-005
****

13.11

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

1) frequency multiplier
2) microphone
3) speech amplifier
4) modulator

<1>

B-003-002-006
****

13.11

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

1) Modulator
2) power amplifier
3) speech amplifier
4) oscillator

<2>

B-003-002-007

****

13.11

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

1. frequency multiplier
2. microphone
3. antenna
4. modulator

<3>

B-003-003-001

****

14.8

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

1) mixer
2) frequency discriminator
3) antenna
4) limiter

<3>

B-003-003-002

****

14.8

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

1. audio frequency amplifier
2. high frequency oscillator
3. intermediate frequency amplifier
4. radio frequency amplifier

<4>

B-003-003-003

****

14.8

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

1) radio frequency amplifier
2) limiter
3) antenna
4) mixer

<4>

B-003-003-004
****

14.8

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

1. frequency discriminator
2. intermediate frequency amplifier
3. speaker and/or headphones
4. high frequency oscillator

<4>

B-003-003-005
****

14.8

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

1) filter
2) limiter
3) frequency discriminator
4) radio frequency amplifier

<1>

B-003-003-006
****

14.8

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

1) high frequency oscillator
2) intermediate frequency amplifier
3) mixer
4) radio frequency amplifier

<2>

B-003-003-007
****

14.8

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

1) filter
2) high frequency oscillator
3) limiter
4) radio frequency amplifier

<3>

B-003-003-008
****

14.8

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

1. intermediate frequency amplifier
2. speaker and/or headphones
3. high frequency oscillator
4. frequency discriminator

<4>

B-003-003-009

****

14.8

In a frequency modulation receiver, the_____is located between the speaker and/or headphones and the frequency discriminator.

1) limiter
2) intermediate frequency amplifier
3) radio frequency amplifier
4) audio frequency amplifier

<4>

B-003-003-010

****

14.8

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

1) intermediate frequency amplifier
2) frequency discriminator
3) speaker and/or headphones
4) limiter

<3>

B-003-004-001

****

13.9

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

1) power amplifier
2) telegraph key
3) master oscillator
4) power supply

<3>

B-003-004-002

****

13.9

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

1) 1. driver/buffer
2) 2. power supply
3) 3. power amplifier
4. master oscillator

<?>

B-003-004-003
****

13.9

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

1) audio amplifier
2) driver/buffer
3) power supply
4) telegraph key

<2>

B-003-004-004
****

13.9

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

1. master oscillator
2. driver/buffer
3. telegraph key
4. power amplifier

<3>

B-003-004-005
****

13.9

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

1) power supply
2) power amplifier
3) telegraph key
4) master oscillator

<2>

B-003-004-006
****

13.9

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

1) power amplifier
2) driver/buffer
3) power supply
4) master oscillator

<1>

B-003-005-001

****

14.9

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

1. product detector
2. high frequency oscillator
3. intermediate frequency amplifier
4. radio frequency amplifier

<4>

B-003-005-002

****

14.9

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

1) filter
2) intermediate frequency amplifier
3) audio frequency amplifier
4) radio frequency amplifier

<4>

B-003-005-003

****

14.9

In a single sideband and CW receiver, the _____is connected to the radio frequency amplifier and the high frequency oscillator.

1) beat frequency oscillator
2) product detector
3) mixer
4) filter

<3>

B-003-005-004

****

14.9

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

1) intermediate frequency amplifier
2) high frequency oscillator
3) beat frequency oscillator
4) product detector

<2>

B-003-005-005

****

14.9

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

1) filter
2) radio frequency amplifier
3) beat frequency oscillator
4) product detector

<1>

B-003-005-006

****

14.9

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

1. intermediate frequency amplifier
2. audio frequency amplifier
3. beat frequency oscillator
4. radio frequency amplifier

<1>

B-003-005-007

****

14.9

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

1. product detector
2. high frequency oscillator
3. beat frequency oscillator
4. intermediate frequency amplifier

<1>

B-003-005-008

****

14.9

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

1. mixer
2. beat frequency oscillator
3. radio frequency amplifier
4. audio frequency amplifier

<2>

B-003-005-009

****

14.9

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

1. intermediate frequency amplifier
2. audio frequency amplifier
3. high frequency oscillator
4. radio frequency amplifier

<2>

B-003-005-010

****

14.9

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

1. speaker and/or headphones
2. mixer
3. radio frequency amplifier
4. beat frequency oscillator

<1>

B-003-006-001

****

13.12

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

1) radio frequency oscillator
2) variable frequency oscillator
3) linear amplifier
4) mixer

<1>

B-003-006-002

****

13.12

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

1. microphone
2. balanced modulator
3. mixer
4. radio frequency oscillator

<2>

B-003-006-003

****

13.12

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

1) radio frequency oscillator
2) speech amplifier
3) filter
4) microphone

<4>

B-003-006-004

****

13.12

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

1) radio frequency oscillator
2) filter
3) mixer
4) microphone

<4>

B-003-006-005
****

13.12

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

1) filter
2) variable frequency oscillator
3) speech amplifier
4) linear amplifier

<3>

B-003-006-006
****

13.12

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

1) antenna
2) balanced modulator
3) linear amplifier
4) mixer

<4>

B-003-006-007
****

13.12

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

1) variable frequency oscillator
2) radio frequency oscillator
3) linear amplifier
4) antenna

<1>

B-003-006-008
****

13.12

In a single sideband transmitter, the _____is in between the mixer and the antenna.

1) variable frequency oscillator
2) linear amplifier
3) balanced modulator
4) radio frequency oscillator

<2>

B-003-006-009
****

13.12

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

1) antenna
2) filter
3) variable frequency oscillator
4) speech amplifier

<1>

B-003-007-001 (NEW)

****

11.14 – Fig. 11-11

In a digital system, the _____ interfaces with the computer.

1) antenna
2) power supply
3) transceiver
4) input/output

<4>

B-003-007-002

****

11.14 - Fig. 11-11

In a digital system, the modem is connected to the

1) amplifier
2) computer
3) antenna
4) input/output

<2>

B-003-007-003

****

11.14 – Fig 11.11

In a digital system, the transceiver is connected to the

1) modem
2) computer
3) scanner
4) input/output

<1>

B-003-007-004 (NEW)

****

11.14 – Fig. 11-11

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

1. input/output
2. transceiver
3. scanner
4. antenna

<2>

B-003-007-005 (NEW)
****

11.14

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

1) serial port
2) sound card
3) keyboard
4) scanner
<2>

B-003-008-001

****

10.1 - Fig. 10-1

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

1. Regulator
2. Input
3. Filter
4. Rectifier
<2>

B-003-008-002

****

10.1 – Fig. 10-1

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

1. transformer
2. output
3. regulator
4. filter
<1>

B-003-008-003

****

10.1 – Fig. 10-1

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

1) rectifier
2) input
3) output
4) regulator
<1>

B-003-008-004

****

10.1 - Fig. 10-1

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

1. filter
2. output
3. transformer
4. regulator

<1>

B-003-008-005

****

10.1 – Fig. 10-1

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

1. regulator
2. transformer
3. rectifier
4. output

<1>

B03-008-006

****

10.1 – Fig. 10-1

In a regulated power supply, the _____ is connected to the regulator

1) output
2) rectifier
3) input
4) transformer

<1>

B-003-009-001

****

8.10

In a Yagi-Uda 3 element directional antenna, the _____is primarily for mechanical purposes.

1) reflector
2) driven element
3) director
4) boom

<4>

B-003-009-002
****

8.10
In a Yagi-Uda 3 element directional antenna, the _____is the longest radiating element.
1. director
2. driven element
3. reflector
4. boom
<3>

B-003-009-003
****

8.10
In a Yagi-Uda 3 element directional antenna, the _____is the shortest radiating element.
1) boom
2) reflector
3) director
4) driven element
<3>

B-003-009-004
****

8.10
In a Yagi-Uda 3 element directional antenna, the _____is not the longest nor the shortest radiating element.
1) boom
2) director
3) driven element
4) reflector
<3>

B-003-010-001
****

12.9, 13.1, 13.5, 13.8
Which list of emission types is in order from the narrowest bandwidth to the widest bandwidth?
1. CW, SSB voice, RTTY, FM voice
2. CW, FM voice, RTTY, SSB voice
3. CW, RTTY, SSB voice, FM voice
4. RTTY, CW, SSB voice, FM voice
<3>

B-003-010-002
****

14.4

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

1) signal plus noise to noise ratio
2) audio output in watts
3) bandwidth of the IF in kilohertz
4) number of RF amplifiers

<1>

B-003-010-003
****

14.4

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

1. a steady oscillator drift
2. more than one signal
3. less signal or more noise
4. more signal or less noise

<3>

B-003-010-004
****

14.9

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

1. Double sideband full carrier
2. Frequency modulation
3. Pulse modulation
4. Single sideband suppressed carrier

<4>

B-003-010-005
****

14.9

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

1) it beats with the received carrier to produce the other sideband
2) it reduces the passband of the IF stages
3) the suppressed carrier must be replaced for detection
4) it phases out the unwanted sideband signal

<3>

B-003-010-006

****

14.6

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?

1) 7.435 MHz
2) 3.995 MHz
3) 455 kHz
4) 3.54 MHz

<3>

B-003-010-007

****

14.10

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

1. A notch filter
2. A band pass filter
3. An all pass filter
4. A pi-network filter

<1>

B-003-010-008

****

14.2

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

1. selectivity, stability and frequency range
2. sensitivity, stability and cross-modulation
3. sensitivity, selectivity and image rejection
4. sensitivity, selectivity and stability

<4>

B-003-010-009

****

14.4

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

1. 250 Hz
2. 2.4 kHz
3. 6 kHz
4. 500 Hz

<2>

B-003-010-010

****

14.4

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

1. 500 Hz
2. 2.4 kHz
3. 6 kHz
4. 250 Hz

<4>

B-003-010-011

****

14.4 & 14.10

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?

1) 2100 - 2300 Hz
2) 300 - 2700 Hz
3) 750 - 850 Hz
4) 100 - 1100 Hz

<3>

B-003-011-001

****

15.7

What does chirp mean?

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

<2>

B-003-011-002

****

15.7

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

1. Add a key-click filter
2. Keep the power supply voltages very steady
3. Keep the power supply current very steady
4. Keep the power supply current very steady

<2>

B-003-011-003
****

13.10

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

1) A crystal-controlled transmitter
2) A VFO-controlled transmitter
3) A single-sideband transmitter
4) A packet-radio transmitter

<2>

B-003-011-004
****

13.4

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

1) Phase modulation
2) Amplitude modulation
3) Amplitude-rectification modulation
4) Frequency modulation

<2>

B-003-011-005
****

13.4

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

1. Frequency modulation
2. Pulse modulation
3. Amplitude modulation
4. Frequency shift keying

<3>

B-003-011-006
****

13.7

Morse code is usually transmitted by radio as:

1) a series of key-clicks
2) a continuous carrier
3) an interrupted carrier
4) a voice-modulated carrier

<3>

B-003-011-007 (NEW)
****

7.8, 11.10,11.11

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

1) loss of modulation in the transmitted signal
2) the driver stage will not deliver power to the final
3) full power will not be transferred to the antenna
4) the output tank circuit breaks down

<3>

B-003-011-008

****

11.11

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

1) smaller DC current drain
2) lower modulation percentage
3) reduced antenna radiation
4) radiated key-clicks

<3>

B-003-011-009

****

13.9

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

1. become over modulated
2. generate key-clicks
3. drift in frequency
4. cause undue distortion

<3>

B-003-011-010

****

11. 11.11

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?

1. It has been dissipated as heat loss
2) 2. It has been used to provide greater efficiency
3. It has been used to provide negative feedback
4. It has been used to provide positive feedback

<1>

B-003-011-011

****

11.11

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

1) is lost in the transmission line
2) appears as heat dissipation
3) is due to oscillating
4) radiates from the antenna

<2>

B-003-012-001

****

11.8

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

1. It may cause interference to other stations operating on a higher frequency band
2. It may cause atmospheric interference in the air around the antenna
3. It may cause splatter interference to other stations operating near its frequency
4. It may cause digital interference to computer equipment

<3>

B-003-012-002

****

11.8

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

1. It may cause digital interference to computer equipment
2. It may cause atmospheric interference in the air around the antenna
3. It may cause interference to other stations operating on a higher frequency band
4. It may cause splatter interference to other stations operating near its frequency

<4>

B-003-012-003

****

13.4

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?

1) Peak output power
2) Peak envelope power
3) Average radio-frequency power
4) Peak transmitter power

<2>

B-003-012-004

****

13.7

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

1) 1 kHz
2) 2 kHz
3) Between 3 and 6 kHz
4) Between 2 and 3 kHz

<4>

B-003-012-005 (NEW)

****

13.12

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

1. IF amplifier
2. Filter
3. RF amplifier
4. Carrier oscillator

<2>

B-003-012-006 (NEW)

****

13.5, 13.10

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

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

<4>

B-003-012-007

****

13.4, 13.12

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

1. It becomes louder with no other effects
2. It occupies less bandwidth with poor high-frequency response
3. It has higher fidelity and improved signal-to-noise ratio
4. It becomes distorted and occupies more bandwidth

<4>

B-003-012-008 (NEW)

****

11.8

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

1. For slight movement of the ALC meter on modulation peaks
2. For full deflection of the ALC meter on modulation peaks
3. For 100% frequency deviation on modulation peaks
4. For a dip in plate current

<1>

B-003-012-009

****

13.12

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

1) make sure that the carrier and both sidebands are 1 80o out of phase
2) ensure that the percentage of modulation is kept constant
3) make sure that the carrier and both sidebands are in phase
4) suppress the carrier and pass on the two sidebands

<4>

B-003-012-010

****

14.9

In a SSB transmission, the carrier is:

1) transmitted with one sideband
2) reinserted at the receiver
3) inserted at the transmitter
4) of no use at the receiver

<2>

B-003-012-011

****

11.8

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

1. eliminates the transmitter distortion
2. controls the peak audio input so that the final amplifier is not overdriven
3. increases the occupied bandwidth
4. reduces the system noise

<2>

B-003-013-001

****

13.6

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

1. It may cause digital interference to computer equipment
2. It may cause atmospheric interference in the air around the antenna
3. It may cause interference to other stations operating on a higher frequency band
4. It may cause interference to other stations operating near its frequency

<4>

B-003-013-002 (NEW)

****

11.4

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

1. It may cause interference to other stations operating near its frequency
2. It may cause digital interference to computer equipment
3. It may cause atmospheric interference in the air around the antenna
4. It may cause interference to other stations operating on a higher frequency band

<1>

B-003-013-003

****

11.4

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

1) Talk louder into the microphone
2) Let the transceiver cool off
3) Change to a higher power level
4) Talk farther away from the microphone

<4>

B-003-013-004

****

13.6

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

1. A frequency-modulated carrier
2. An amplitude-modulated carrier
3. An unmodulated carrier
4. A phase-modulated carrier

<3>

B-003-013-005

****

13.6

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

1. It has high-fidelity audio which can be understood even when the signal is somewhat weak
2. The carrier is not detectable
3. It is more resistant to distortion caused by reflected signals
4. Its RF carrier stays on frequency better than the AM modes

<1>

B-003-013-006

****

13.7

What is the usual bandwidth of a frequency-modulated amateur signal?

1) Between 10 and 20 kHz
2) Less than 5 kHz
3) Between 5 and 10 kHz
4) Greater than 20 kHz

<1>

B-003-013-007

****

11.4

What is the result of overdeviation in an FM transmitter?

1) Out-of-channel emissions
2) Increased transmitter power
3) Increased transmitter range
4) Poor carrier suppression

<1>

B-003-013-008

****

13.6, 13.11

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

1. Multiplex modulation
2. Amplitude modulation
3. Pulse modulation
4. Phase modulation

<4>

B-003-013-009
****

13.7

Why isn't frequency modulated (FM) phone used below 29.5 MHz?

1. The transmitter efficiency for this mode is low
2. Harmonics could not be attenuated to practical levels
3. The frequency stability would not be adequate
4. The bandwidth would exceed limits in the Regulations

<4>

B-003-013-010
****

11.4

You are transmitting FM on the 2 metre band. Several stations advise you that your transmission is 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?

1. The frequency deviation of your transmitter is set too high
2. The power supply output voltage is low
3. The repeater is reversing your sidebands
4. The frequency counter is giving an incorrect reading and you are indeed off frequency

<1>

B-003-013-011
****

14.8

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

1) attach effect
2) interference effect
3) surrender effect
4) capture effect

<4>

B-003-014-001
****

11.13

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

1) An electronic keyer
2) A key-operated on/off switch
3) A notch filter
4) A DTMF keypad

<1>

B-003-014-002

****

11.15

Where would you connect a microphone for voice operation?

1) To a transceiver
2) To a power supply
3) To an antenna switch
4) To an antenna

<1>

B-003-014-003

****

11.15

What would you connect to a transceiver for voice operation?

1) A receiver audio filter
2) A terminal-voice controller
3) A microphone
4) A splatter filter

<3>

B-003-014-004

11.6

Why might a dummy antenna get warm when in use?

1. Because it absorbs static electricity
2. Because it stores radio waves
3. Because it changes RF energy into heat
4. Because it stores electric current

<3>

B-003-014-005

****

11.4

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

1. VXO
2. VCO
3. VFO
4. VOX

<4>

B-003-014-006

****

11.8

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

1) It improves signal intelligibility at the receiver
2) It reduces average transmitter power requirements
3) It reduces unwanted noise pickup from the microphone
4) It improves voice frequency fidelity

<1>

B-003-014-007

****

11.8

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

1. It will add nothing to the output PEP
2) 2. It will increase the output PEP
3. It will decrease the peak power output
4. It will decrease the average power output

<1>

B-003-014-008

****

13.14

When switching from receive to transmit:

1) the receiver should be muted
2) the transmit oscillator should be turned off
3) the receiving antenna should be connected
4) the power supply should be off

<1>

B-003-014-009

****

13.14

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

1. ground the antenna on receive
2. disable the unit not being used
3. switch between meters
4. disconnect the antenna tuner

<2>

B-003-014-010

****

13.14

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

1) so that one antenna can be used for transmitter and receiver
2) to change antennas for operation on other frequencies
3) to prevent RF currents entering the receiver circuits
4) to allow more than one transmitter to be used

<1>

B-003-014-011

****

11.15

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

1) crystal earpiece
2) resistor
3) loudspeaker
4) capacitor

<3>

B-003-015-001 (NEW)

****

12.9

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

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

<4>

B-003-015-002

****

12.9

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

1. A member of the Amateur Auxiliary is copying all messages
2. A receiving station is displaying messages that may not be sent to it, and is not replying to any message
3. A receiving station is displaying all messages sent to it, and replying that the messages are being received correctly
4. Canada is monitoring all messages

<2>

B-003-015-003

****

12.9

What is a digipeater?

1. A repeater built using only digital electronics parts
2. A repeater that changes audio signals to digital data
3. A packet-radio station that retransmits only data that is marked to be retransmitted
4. A packet-radio station that retransmits any data that it receives

<3>

B-003-015-004

****

12.9

What does "network" mean in packet radio?

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

<1>

B-003-015-005 (NEW)

****

11.14, 12.9

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

1. A transceiver and a modem
2. ADTMF keypad, a monitor and a transceiver
3. A DTMF microphone, a monitor and a transceiver
4. A transceiver, a computer and possibly a GPS system

<4>

B-003-015-006

****

12.9

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

1) Connect a terminal-node controller to the transceiver's microphone input
2) Connect a terminal-node controller to interrupt the transceiver's carrier wave
3) Connect a keyboard to the transceiver's microphone input
4) Connect a DTMF key pad to the transceiver's microphone input

<1>

B-003-015-007

****

12.9

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

1) Approximately 6 kHz
2) Approximately 3 kHz
3) 250 to 500 Hz
4) 60 Hz

<3>

B-003-015-008

****

12.9

Digital transmissions use signals called _____to transmit the states 1 and 0

1) packet and AMTOR
2) Baudot and ASCII
3) mark and space
4) dot and dash

<3>

B-003-015-009

****

12.9

Which of the following terms does not apply to packet?

1. ASCII
2. Baudot
3. Terminal-Node Controller (TNC)
4. AX.25

<2>

B-003-015-010

****

12.9

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

1) test purposes only
2) only when communications have been completed
3) for communications after contact has been established
4) when making a general call

<3>

B-003-015-011(NEW)
****

13.4

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

1. Lower rate
2. Power amplifier overheating
3. Splatter or out of channel emissions
4. Higher signal-to-noise ratio

<3>

You are causing overmodulation. The source of the audio is a “red herring”.

B-003-016-001
****

2.13

How much voltage does a standard automobile battery usually supply?

1) About 240 volts
2) About 120 volts
3) About 12 volts
4) About 9 volts

<3>

B-003-016-002
****

2.13

Which component has a positive and a negative side?

1) A potentiometer
2) A fuse
3) A resistor
4) A battery

<4>

B-003-016-003
****

2.13

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

1) low leakage cell
2) memory cell
3) storage cell
4) primary cell

<3>

B-003-016-004 (NEW)

****

2.13

Which of the following is a source of EMF?

1. germanium diode
2. lithium-ion battery
3. P channel FET
4. carbon resistor

<2>

B-003-016-005

****

2.13

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

1) has two terminals
2) can be repeatedly recharged
3) can be completely discharged
4) contains an electrolyte

<2>

B-003-016-006 (NEW)

****

2.13

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

1) electrolyte becoming dry
2) internal resistance
3) current capacity
4) voltage capacity

<2>

B-003-016-007

****

2.13

The most common primary cell in use today is the carbon-zinc or flashlight cell. This cell can be recharged:

1) never
2) twice
3) many times
4) once

<1>

B-003-016-008 (NEW)

****

2.13

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?

1. The battery will accept the subsequent charge in a shorter time.
2. The voltage delivered will be higher
3. The battery charge will not last as long
4. The internal resistance of the cell is short-circuited

<3>

The easiest way to exceed the specified period of time is to connect the two terminals, + and -, with a conductor such as a wire. You can accomplish the same thing by putting a charged battery pack from a portable VHF transceiver in your pocket with a handful of change – not! With no external load attached the current flow is excessive and the internal resistance becomes the load, quickly converting the energy into heat. Higher currents cause more heating according to the power formula, P = I^2 x R.

B-003-016-009

****

2.13

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

1) parallel
2) series
3) parallel resonant
4) series resonant

<1>

B-003-016-010

****

2.13

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

1) parallel
2) series-parallel
3) resonance
4) series

<4>

B-003-016-011 (NEW)
****

2.13

A lithium-ion battery should never be:
1. short-circuited
2. recharged
3. left disconnected
4. left overnight at room temperature
<1>

The comment made about Ni-Cad cells in S2.13 applies also to lithium-ion cells. See the comment above in B-003-016-008.

B-003-017-001 (NEW)
****

If your mobile transceiver works in your car but not in your home, what should you check first?
1) The power supply
2) The speaker
3) The microphone
4) The SWR meter
<1>

B-003-017-002
****

10.1

What device converts household current to 12 VDC?
1) A low pass filter
2) A power supply
3) An RS-0232 interface
4) A catalytic converter
<2>

B-003-017-003
****

10.2

Which of these usually needs a heavy-duty power supply?
1) An antenna switch
2) A receiver
3) A transceiver
4) An SWR meter
<3>

B-003-017-004
****

10.4

What may cause a buzzing or hum in the signal of an AC-powered transmitter?
1) A bad filter capacitor in the transmitter's power supply
2) Using an antenna which is the wrong length
3) Energy from another transmitter
4) Bad design of the transmitter's RF power output circuit
<1>

B-003-017-005
****

10.2

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

1. 17 watts
2. 2.4 watts
3. 6 watts
4. 60 watts

<4>

Power = EI, so this power supply has a rating of 12 X 5 = 60 watts output. So your transformer would have to be rated higher than 60 watts.

B-003-017-006
****

9.2

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

1) has a high resistance to AC but not to DC
2) allows electrons to flow in only one direction from cathode to anode
3) has a high resistance to DC but not to AC
4) allows electrons to flow in only one direction from anode to cathode

<2>

B-003-017-007
****

10.1

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

1) transformer
2) capacitor
3) diode
4) resistor

<3>

B-003-017-008 (NEW)
****

16.1

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

1. 120 and 240 volts
2. 110 and 220 volts
3. 100 and 200 volts
4. 130 and 260 volts

<1>

AC Voltages supplied to homes can be as low as 100/200 V and as high as 130/260V. This is further complicated by frequent references to 115 V and 220 V. So simply remember the answer that IC wants, #1

B-003-017-009 (NEW)
****

2.6

Your mobile HF transceiver draws 22 amperes on transmit. The manufacturer suggest limiting the 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?

1) Number 12, 0.11 V per metre (0.03 V per foot)
2) Number 8, 0.05 V per metre (0.01 V per foot)
3) Number 10, 0.07 V per metre (0.02 V per foot)
4) Number 14, 0.19 V per metre (0.06 V per foot)

<1>

The voltage drop calculation is simply (length) x (V/unit length). Using metres #1, 12 gauge, gives a voltage drop of (0.11)x(3)= 0.33 V. Similarly for #2, the voltage drop would be 0.15 V; for #3, 0.21 V; for #4, 0.57 V. We can scrap #4 right away as it exceeds the limit of 0.5 V. The larger the gauge number, the smaller the diameter and the lower the cost. Our best bet is #1, 12 gauge, the best bang for the buck. However, the answer on the IC database is wrong; they want #3. So best memorize what they want.

B-003-017-010 (NEW)
****

16.3

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

1) To prevent an overcurrent from starting a fire
2) To prevent interference to the vehicle's electronic systems
3) To reduce the voltage drop in the radio's DC supply.
4) To protect the radio from transient voltages.

<1>

Fuses are installed as a safety precaution!!!

B-003-017-011
****

10.4

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?

1) the power supply
2) the variable-frequency oscillator
3) the driver circuit
4) the power amplifier circuit

<1>

B-003-018-001
****

11.5

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

1) Use a key-operated on/off switch in the main power line
2) Use a carrier-operated relay in the main power line
3) Put a "Danger - High Voltage" sign in the station
4) Put fuses in the main power line

<1>

B-003-018-002
****

11.5

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

1) Tune the radio to an unused frequency when you are done using it
2) Turn the radio off when you are not using it
3) Disconnect the microphone when you are not using it
4) Put a "Do not touch" sign on the radio

<3>

B-003-018-003
****

11.5

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

1. For safety, in case the main fuses fail
2. To keep the power company from turning off your electricity during an emergency
3. For safety, to turn off the station in the event of an emergency
4. To keep unauthorized persons from using your station

<4>

B-003-018-004
****

16.4

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

1) To keep anyone opening the cabinet from getting shocked by dangerous high voltages
2) To keep dangerous RF radiation from leaking out through an open cabinet
3) To keep dangerous RF radiation from coming in through an open cabinet
4) To turn the power supply off when it is not being used

B-003-018-005
****

16.5

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

1) Approximately 10 amperes
2) More than 20 amperes
3) Current flow through the human body is never fatal
4) As little as 1/10 of an ampere

<4>

B-003-018-006
****

16.5

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

1) The heart
2) The brain
3) The liver
4) The lungs

<1>

B-003-018-007
****

16.5

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

1) 100 volts
2) 1000 volts
3) 2000 volts
4) 30 volts

<4>

B-003-018-008
****

16.5

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

1. Wait for a few minutes to see if the person can get away from the high voltage on their own, then try to help
2. Immediately drag the person away from the high voltage
3. Turn off the power, call for emergency help and give CPR if needed
4. Run from the area so you won't be burned too

<3>

B-003-018-009
****

16.5

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

1. Turn off the high voltage switch before removing the person from contact with the source
2. Wrap the person in a blanket and pull him to a safe area
3. Call an electrician
4. Remove the person by pulling an arm or a leg

<1>

B-003-018-010
****

16.4

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

1. turn off the power and remove power plug
2. short out leads of filter capacitor
3. check action of capacitor bleeder resistance
4. remove and check fuse from power supply

<1>

B-003-018-011

****

16.4

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:

1) electric shock
2) damaging the transmitter
3) overmodulation
4) blowing the fuse

<1>

B-003-019-001

**********16.2

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

1. The antenna transmission line
2. All station equipment
3. The AC power line
4. The power supply primary

<2>

B-003-019-002

****

16.2

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

1) a metallic cold water pipe
2) a plastic cold water pipe
3) a window screen
4) a metallic natural gas pipe

<1>

B-003-019-003

****

16.2

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

1) a good ground connection
2) a dummy load
3) insulated shock mounts
4) the antenna

<1>

B-003-019-004
****

16.2

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

1) Hard plastic
2) Iron or steel
3) Fiberglass
4) Copper-clad steel

<4>

B-003-019-005 (NEW)
****

16.2

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

1) 2.5 metres (8 ft)
2) 3 metres (10 ft)
3) The station ground system must conform to applicable electrical code requirements
4) 1.2 metre (4 ft)

<3>

Answer #2, 3 metres/10 ft, used to be the correct answer. As codes change from province to province, IC has elected to move to answer #3.

B-003-019-006
****

16.2

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

1) To the white wire
2) To the "hot" side of the power switch
3) To the chassis
4) To the fuse

<3>

B-003-019-007
****

16.2

If your third-floor amateur station has a ground wire running 10.05 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?

1) Because of a bad antenna connection, allowing the RF energy to take an easier path out of the transceiver through you
2) Because the transceiver's heat-sensing circuit is not working to start the cooling fan
3) Because the ground wire is a resonant length on several HF bands and acts more like an antenna than an RF ground connection
4) Because the ground rod is not making good contact with moist earth

<3>

B-003-019-008

****

16.2

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

1) Make a couple of loops in the ground wire where it connects to your station
2) Drive the ground rod at least 420 cm (14 feet) into the ground
3) Keep the station's ground wire as short as possible
4) Use a beryllium ground wire for best conductivity

<3>

B-003-019-009

****

16.2

Which statement about station grounding is true?

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

<3>

B-003-019-010

****

16.2

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:

1) does not become conductive to prevent electric shock
2) becomes conductive to prevent electric shock
3) develops a high voltage compared to the ground
4) does not develop a high voltage with respect to the ground

<4>

B-003-019-011

****

16.2

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

1. prevent the plug from being reversed in the wall outlet
2. prevent the chassis from becoming live in case of an internal short to the chassis
3. prevent short circuits
4. make it inconvenient to use

<2>

B-003-020-001
****

16.8

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

1) To lock the antenna system in one position
2) To protect the station and building from lightning damage
3) To avoid radio frequency interference
4) To make sure everything will stay in place

<2>

B-003-020-002 (NEW)
****

16.8

You want to install a lightning arrestor on your antenna transmission line. Where should antenna feed point it be installed?

1) Outside as close to the to the earth grounding as possible.
2) Close to the antenna
3) Behind the antenna
4) Disconnect all equipment from the power lines and antenna cables.

<1>

B-003-020-003
****

16.8

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

1) Disconnect all equipment from the power lines and antenna cables
2) Use heavy insulation on the wiring
3) Never turn off the equipment
4) Disconnect the ground system from all radio

<1>

B-003-020-004
****

16.7

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

1. A reflective vest of approved color
2. Approved equipment in accordance with provincial safety standards concerning climbing
3. A flashing red, yellow or white light
4. A grounding chain

<2>

B-003-020-005
****

16.7

Why should you wear a safety belt if you are working on an antenna tower?

1. To safely bring any tools you might use up and down the tower
2. To keep the tower from becoming unbalanced while you are working
3. To prevent you from accidentally falling
4. To safely hold your tools so they don't fall and injure someone on the ground

<3>

B-003-020-006
****

16.6
For safety, how high should you place a horizontal wire antenna?
1) Above high-voltage electrical lines
2) Just high enough so you can easily reach it for adjustments or repairs
3) High enough so that no one can touch any part of it from the ground
4) As close to the ground as possible
<3>

B-003-020-007
****

16.7
Why should you wear a hard hat if you are on the ground helping someone work on an antenna tower?
1. So you won't be hurt if the tower should accidentally fall
2. To keep RF energy away from your head during antenna testing
3. So someone passing by will know that work is being done on the tower and will stay away
4. To protect your head from something dropped from the tower
<4>

B-003-020-008
****

16.6
Why should your outside antennas be high enough so that no one can touch them while you are transmitting?
1. Touching the antenna might reflect the signal back to the transmitter and cause damage
2. Touching the antenna might radiate harmonics
3. Touching the antenna might cause RF burns
4. Touching the antenna might cause television interference
<3>

B-003-020-009
****

16.6
Why should you make sure that no one can touch an open-wire transmission line while you are transmitting with it?
1. Because contact might break the transmission line
2. Because high-voltage radio energy might burn the person
3. Because contact might cause spurious emissions
4. Because contact might cause a short circuit and damage the transmitter
<2>

B-003-020-010
****

16.9
What safety precautions should you take before beginning repairs on an antenna?
1) Be sure to turn off the transmitter and disconnect the transmission line
2) Be sure you and the antenna structure are grounded
3) Inform your neighbors so they are aware of your intentions
4) Turn off the main power switch in your house
<1>

B-003-020-011
****

16.6

What precaution should you take when installing a ground-mounted antenna?

1. It should be painted so people or animals do not accidentally run into it
2. It should not be installed in a wet area
3. It should be installed so no one can come in contact with it
4. It should not be installed higher than you can reach

<3>

B-003-021-001 (NEW)
****

16.9

What should you do for safety when operating at UHF and microwave frequencies?

1. Keep antenna away from your eyes when RF is applied
2. Make sure that an RF leakage filter is installed at the antenna feed point
3. Make sure the standing wave ratio is low before you conduct a test
4. Never use a horizontally polarized antenna

<1>

B-003-021-002
****

16.9

What should you do for safety if you put up a UHF transmitting antenna?

1. Make sure the antenna is near the ground to keep its RF energy pointing in the correct direction
2. Make sure the antenna will be in a place where no one can get near it when you are transmitting
3. Make sure you connect an RF leakage filter at the antenna feed point
4. Make sure that RF field screens are in place

<2>

B-003-021-003
****

16.9

What should you do for safety, before removing the shielding on a UHF power amplifier?

1. Make sure that RF leakage filters are connected
2. Make sure the antenna transmission line is properly grounded
3. Make sure the amplifier cannot accidentally be turned on
4. Make sure all RF screens are in place at the antenna transmission line <3>

B-003-021-004
****

16.9

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

1. To use your body to reflect the signal in one direction
2. To reduce your exposure to the radio-frequency energy
3. To keep static charges from building up
4. To help the antenna radiate energy equally in all directions

<2>

B-003-021-005
****

16.9

How should you position the antenna of a hand-held transceiver while you are transmitting?
1. Pointed towards the station you are contacting
2. Pointed away from the station you are contacting
3. Pointed down to bounce the signal off the ground
4. Away from your head and away from others

<4>

B-003-021-006
****

16.9

How can exposure to a large amount of RF energy affect body tissue?
1) It causes radiation poisoning
2) It paralyzes the tissue
3) It produces genetic changes in the tissue
4) It heats the tissue

<4>

B-003-021-007
****

16.9

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

1. Heart
2. Eyes
3. Liver
4. Hands

<2>

B-003-021-008
****

16.9

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?
1. It causes radiation poisoning
2. It causes blood flow to stop
3. It produces genetic changes in the tissue
4. It heats the tissue

<4>

B-003-021-009
****

16.9

If you operate your amateur station with indoor antennas, what precautions should you take when you install them?
1. Position the antennas parallel to electrical power wires to take advantage of parasitic effects
2. Position the antennas along the edge of a wall where it meets the floor or ceiling to reduce parasitic radiation
3. Locate the antennas as far away as possible from living spaces that will be occupied while you are operating
4. Locate the antennas close to your operating position to minimize feed-line length

<3>

B-003-021-010 (NEW)

****

16.6

Why should directional high-gain antennas be mounted higher than nearby structures?

1. So they will not direct RF energy toward people in nearby structures
2. So they will be dried by the wind after a heavy rain storm
3. So they will not damage nearby structures with RF energy
4. So they will receive more sky waves and fewer ground waves

<1>

B-003-021-011

****

16.6

For best RF safety, where should the ends and center of a dipole antenna be located?

1. As high as possible to prevent people from coming in contact with the antenna
2. Near or over moist ground so RF energy will be radiated away from the ground
3. As close to the transmitter as possible so RF energy will be concentrated near the transmitter
4. Close to the ground so simple adjustments can be easily made without climbing a ladder

<1>

B-004-001-001

****

13.9

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

1. an amplifier
2. a modulator
3. an oscillator
4. a receiver

<1>

B-004-001-002

****

13.12

If an amplifier becomes non-linear, the output signal would:

1. become distorted
2. be saturated
3. cause oscillations
4. overload the power supply

<1>

B-004-001-003

****

14.7

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

1) an RF oscillator
2) an audio oscillator
3) an RF amplifier
4) an audio amplifier

<3>

B-004-001-004

****

13.10

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

1) an RF oscillator
2) an RF amplifier
3) an audio amplifier
4) an audio oscillator

<3>

B-004-001-005

****

13.10

The range of frequencies to be amplified by a speech amplifier is typically:

1) 3 to 300 Hz
2) 300 to 1000 Hz
3) 40 to 40 000 Hz
4) 300 to 3000 Hz

<4>

B-004-001-006

****

9.5

Which of the following IS NOT amplified by an amplifier?

1) current
2) resistance
3) power
4) voltage

<2>

B-004-001-007

****

9.5

The increase in signal level by an amplifier is called:

1) attenuation
2) amplitude
3) modulation
4) gain

<4>

B-004-001-008

****

9.5

A device with gain has the property of:

1. attenuation
2. oscillation
3. modulation
4. amplification

<4>

B-004-001-009
****

9.5

A device labeled "Gain = 10 dB" is likely to be an:

1) attenuator
2) oscillator
3) audio fader
4) amplifier

<4>

B-004-001-010
****

9.5

Amplifiers can amplify:

1) current, power, or inductance
2) voltage, current, or power
3) voltage, power, or inductance
4) voltage, current, or inductance

<2>

B-004-001-011
****

9.5/9.6

Which of the following is not a property of an amplifier?

1) gain
2) linearity
3) distortion
4) loss

<4>

B-004-002-001
****

9.2

Zener diodes are used as:

1. current regulators
2. voltage regulators
3. RF detectors
4. AF detectors

<2>

5. B-004-002-002

****

14.6

One important application for diodes is recovering information from transmitted signals. This is referred to as:

1) regeneration
2) ionization
3) biasing
4) demodulation

<4>

B-004-002-003

****

9.2

The primary purpose of a Zener diode is to:

1) provide a voltage phase shift
2) regulate or maintain a constant voltage
3) to boost the power supply voltage
4) provide a path through which current can flow

<2>

B-004-002-004

****

10.1

1. The action of changing alternating current to direct current is called: 1) amplification
2. rectification
3. transformation
4. modulation

<2>

B-004-002-005

****

9.2

The electrodes of a semi-conductor diode are known as:

1. gate and source
2. anode and cathode
3. collector and base
4. cathode and drain

<2>

B-004-002-006

****

10.1

If alternating current is applied to the anode of a diode, what would you expect to see at the cathode?

1. No signal
2. Steady direct current
3. Pulsating direct current
4. Pulsating alternating current

<3>

B-004-002-007 (NEW)

****

9.2

In a semi-conductor diode, electrons flow from:

1) anode to cathode
2) cathode to grid
3) grid to anode
4) cathode to anode

<4>

B-004-002-008

****

9.2

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

1) A light-emitting diode
2) A fluorescent bulb
3) A neon bulb
4) A vacuum diode

<1>

B-004-002-009

****

9.2

Voltage regulation is the principal application of the:

1) junction diode
2) light-emitting diode
3) vacuum diode
4) Zener diode

<4>

B-004-002-010

****

9.2

In order for a diode to conduct, it must be:

1. close coupled
2. forward-biased
3. enhanced
4. reverse-biased

<2>

B-004-003-001

****

9.5

Which component can amplify a small signal using low voltages?

1) A variable resistor
2) An electrolytic capacitor
3) A multiple-cell battery
4) A PNP transistor

<4>

B-004-003-002

****

9.5

The basic semi-conductor amplifying device is the:

1) tube
2) P-N junction
3) transistor
4) diode

<3>

B-004-003-003

****

9.3

The three leads from a PNP transistor are named:

1) drain, base and source
2) collector, emitter and base
3) collector, source and drain
4) gate, source and drain

<2>

B-004-003-004

****

9.5

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:

1) detection
2) modulation
3) rectification
4) amplification

<4>

B-004-003-005

****

9.3

Bipolar transistors usually have:

1. 2 leads
2. 3 leads
3. 1 lead
4. 4 leads

<2>

B-004-003-006

****

9.3

A semi-conductor is described as a "general purpose audio NPN device". This would be:

1. a bipolar transistor
2. a silicon diode
3. a triode
4. an audio detector

<1>

B-004-003-007
****

9.3

The two basic types of bipolar transistors are:

1) diode and triode types
2) NPN and PNP types
3) varicap and Zener types
4) P and N channel types

<2>

B-004-003-008
****

9.6

A transistor can be destroyed in a circuit by:

1) excessive heat
2) excessive light
3) saturation
4) cut-off

<1>

B-004-003-009
****

9.9

In a bipolar transistor, the _____ compares closest to the control grid of a triode vacuum tube.

1) emitter
2) base
3) source
4) collector

<2>

B-004-003-010
****

9.9

In a bipolar transistor, the _____ compares closest to the plate of a triode vacuum tube.

1. gate
2. emitter
3. collector
4. base

<3>

B-004-003-011
****

9.9

In a bipolar transistor, the _____ compares closest to the cathode of a triode vacuum tube.

1) collector
2) base
3) drain
4) emitter

<4>

B-004-004-001
****

9.4
The two basic types of field effect transistors (FET) are:
1) NPN and PNP
2) germanium and silicon
3) inductive and capacitive
4) N and P channel
<4>

B-004-004-002
****

9.4
A semi-conductor having its leads labeled gate, drain, and source is best described as a:
1) gated transistor
2) field-effect transistor
3) bipolar transistor
4) silicon diode
<2>

B-004-004-003
****

9.4
In a field effect transistor, the_____is the terminal that controls the conductance of the channel.
1. gate
2. drain
3. source
4. collector
<1>

B-004-004-004
****

9.4
In a field effect transistor, the _____is the terminal where the charge carriers enter the channel.
1. source
2. gate
3. drain
4. emitter
<1>

B-004-004-005
****
9.4
In a field effect transistor, the _____is the terminal where the charge carriers leave the channel.
1) collector
2) source
3) drain
4) gate
<3>

B-004-004-006
****
9.9
Which semi-conductor device has characteristics most similar to a triode vacuum tube?
1) Junction diode
2) Zener diode
3) Field effect transistor
4) Bipolar transistor
<3>

B-004-004-007
****
9.4
The control element in the field effect transistor is the:
1. gate
2. source
3. drain
4. base
<1>

B-004-004-008
****
9.4
If you wish to reduce the current flowing in a field effect transistor, you could:
1. increase the reverse bias voltage
2. decrease the reverse bias voltage
3. increase the forward bias voltage
4. increase the forward bias gain
<1>

B-004-004-009
****
9.9
The source of a field effect transistor corresponds to the _____of a bipolar transistor.
1. base
2. emitter
3. drain
4. collector
<2>

B-004-004-010

****

9.9

The drain of a field effect transistor corresponds to the _____ of a bipolar transistor.

1) base
2) collector
3) source
4) emitter

<2>

B-004-004-011

****

9.5

Which two elements in a field effect transistor exhibit fairly similar characteristics?

1. Source and gate
2. Gate and drain
3. Source and base
4. Source and drain

<4>

B-004-005-001

****

9.9

What is one reason a triode vacuum tube might be used instead of a transistor in a circuit?

1) It uses less current
2) It may be able to handle higher power
3) It is much smaller
4) It uses lower voltages

<2>

B-004-005-002

****

9.9

Which component can amplify a small signal but must use high voltages?

1. A vacuum tube
2. A transistor
3. An electrolytic capacitor
4. A multiple-cell battery

<1>

B-004-005-003

**********3**********

9.9

A feature common to tubes and transistors is that both:

1. have electrons drifting through a vacuum
2. can amplify signals
3. convert electrical energy to radio waves
4. use heat to cause electron movement

<2>

B-004-005-004
****

9.9

In a vacuum tube, the electrode that is operated with the highest positive potential is the_____.

1) filament (heater)
2) plate
3) cathode
4) grid

<2>

B-004-005-005
****

9.9

In a vacuum tube, the electrode that is usually a cylinder of wire mesh is the _____ .

1) filament (heater)
2) grid
3) cathode
4) plate

<2>

B-004-005-006
****

9.9

In a vacuum tube, the element that is furthest away from the plate is the _____ .

1) grid
2) emitter
3) cathode
4) filament (heater)

<4>

B-004-005-007
****

9.9

In a vacuum tube, the electrode that emits electrons is the .

1. cathode
2. grid
3. collector
4. plate

<1>

B-004-005-008
****

9.9

What is inside the envelope of a triode tube?

1. argon
2. a vacuum
3. air
4. neon

<2>

B-004-005-009
****

9.9

How many grids are there in a triode vacuum tube?

1) two
2) three
3) three plus a filament
4) one

<4>

B-004-006-001
****

2.7.4

How do you find a resistor's tolerance rating?

1) By using Thevenin's theorem for resistors
2) By reading the resistor's color code
3) By reading its Baudot code
4) By using a voltmeter

<2>

B-004-006-002
****

2.7.4

What do the first three-color bands on a resistor indicate?

1) The resistance material
2) The power rating in watts
3) The value of the resistor in ohms
4) The resistance tolerance in percent

<3>

B-004-006-003
****

2.7.4

What does the fourth color band on a resistor mean?

1) The value of the resistor in ohms
2) The power rating in watts
3) The resistance material
4) The resistance tolerance in percent

<4>

B-004-006-004
****

2.7.4

What are the possible values of a 100 ohm resistor with a 10% tolerance?

1. 90 to 110 ohms
2. 90 to 100 ohms
3. 10 to 100 ohms
4. 80 to 120 ohms

<1>

B-004-006-005

****

2.7.4

How do you find a resistor's value?

1) By using the resistor's color code
2) By using a voltmeter
3) By using Thevenin's theorem for resistors
4) By using the Baudot code

<1>

B-004-006-006 (NEW)

****

2.7.4

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?

1) 5 %
2) 10%
3) 20%
4) 0.1%

<4>

B-004-006-007 (NEW)

****

2.7.4

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 tolerance would you select?

1) 10%
2) 20%
3) 0.1%
4) 5%

<2>

B-004-006-008

****

2.6

If a carbon resistor's temperature is increased, what will happen to the resistance?

1 It will stay the same
2 It will change depending on the resistor's temperature coefficient rating
3 It will become time dependent
4 It will increase by 20% for every 10 degrees centigrade

<2>

B-004-006-009
****

2.7.4
A gold band on a resistor indicates the tolerance is:
1. 20%
2. 10%
3. 5 %
4. 1%

<3>

B-004-006-010 (NEW)
****

2.7.4
A resistor with a colour code of brown, black, and red, would have a value of:

1. 1000 ohms
2. 100 ohms
3. 10 ohms
4. 10000 ohms

<1>

B-004-006-011 (NEW)
****

2.7.4
Given that red = 2, violet = 7 and yellow = 4, what is the nominal of a resistor whose colour code reads red, violet and yellow?

1. 270 kilohms
2. 274 ohms
3. 72 ohms
4. 27 megohms

<1>

B-005-001-001
****

A1.5
If a dial marked in megahertz shows a reading of 3.525 MHz, what would it show if it were marked in kilohertz?

1. 35.25 kHz
2. 3525 kHz
3. 3 525 000 kHz
4. 0.003525 kHz

<2>

B-005-001-002 (NEW)

****

A1.5

If an ammeter marked in amperes is used to measure a 3000 milliampere current what reading would it show?

1) 3 000 000 amperes
2) 3 amperes
3) 0.003 amperes
4) 0.300 amperes

<2>

3000 mA = 3 A

B-005-001-003

****

A1.5

If a voltmeter marked in volts is used to measure a 3500 millivolt potential, what reading would it show?

1. 3.5 volts
2. 0.35 volt
3. 35 volts
4. 350 volts

<1>

B-005-001-004

****

A1.5

How many microfarads is 1 000 000 picofarads?

1) 1 000 000 000 microfarads
2) 1000 microfarads
3) 1 microfarad
4) 0.00 1 microfarad

<3>

B-005-001-005

****

A1.5

If you have a hand-held transceiver which puts out 500 milliwatts, how many watts would this be?

1. 5
2. 0.5
3. 50
4. 0.02

<2>

B-005-001-006

****

A1.5

A kilohm is:

1. 0.1 ohm
2. 0.001 ohm
3. 10 ohms
4. 1000 ohms

<4>

B-005-001-007

****

A1.5

6.6 kilovolts is equal to:

1. 6600 volts
2. 660 volts
3. 66 volts
4. 66 000 volts

<1>

B-005-001-008

****

A1.5

A current of one quarter ampere may be written as:

1) 0.5 amperes
2) 0.25 milliampere
3) 250 microampere
4) 250 milliamperes

<4>

B-005-001-009

****

A1.5

How many millivolts are equivalent to two volts?

1) 0.000002
2) 2 000
3) 2 000 000
4) 0.002

<2>

B-005-001-010

****

A1.5

One megahertz is equal to:

1) 1 000 kHz
2) 100 kHz
3) 0.001 Hz
4) 10 Hz

<1>

B-005-001-011
****

A1.5

An inductance of 10 000 microhenrys may be stated correctly as:

1. 100 millihenrys
2. 10 henrys
3. 1 000 henrys
4. 10 millihenrys

<4>

B-005-002-001
****

2.5

Name three good electrical conductors.

1) Gold, silver, wood
2) Gold, silver, aluminum
3) Copper, aluminum, paper
4) Copper, gold, mica

<2>

B-005-002-002
****

2.5

Name four good electrical insulators.

1. Plastic, rubber, wood, carbon
2. Paper, glass, air, aluminum
3. Glass, air, plastic, porcelain
4. Glass, wood, copper, porcelain

<3>

B-005-002-003
****

2.5

Why do resistors sometimes get hot when in use?

1) Their reactance makes them heat up
2) Hotter circuit components nearby heat them up
3) They absorb magnetic energy which makes them hot
4) Some electrical energy passing through them is lost as heat

<4>

B-005-002-004
****

2.5

What is the best conductor among the following materials?

1. carbon
2. silicon
3. aluminum
4. copper

<4>

B-005-002-005

****

2.5

The material listed, which will most readily allow an electric current to flow, is called?

1. a conductor
2. an insulator
3. a resistor
4. a dielectric

<1>

B-005-002-006

****

2.5

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:

1) high resistance
2) high wattage
3) low wattage
4) low resistance

<4>

B-005-002-007

****

2.6

The letter "R" is the symbol for:

1. impedance
2. resistance
3. reluctance
4. reactance

<2>

B-005-002-008

****

2.8

The reciprocal of resistance is:

1) conductance
2) reactance
3) reluctance
4) permeability

<1>

B-005-002-009
****

3.5
Voltage drop means:
1. voltage developed across the terminals of a component
2. any point in a radio circuit which has zero voltage
3. difference in voltage at output terminals of a transformer
4. the voltage which is dissipated before useful work is accomplished
<1>

B-005-002-010
****

2.6
The resistance of a conductor changes with:
1. voltage
2. temperature
3. current
4. humidity
<2>

B-005-002-011
****

2.7.1
The most common material used to make a resistor is:
1. Carbon
2. gold
3. mica
4. lead
5. <1>

B-005-003-001
****

2.3
What is the word used to describe the rate at which electrical energy is used?
1. Current
2. Power
3. Voltage
4. Resistance
<2>

B-005-003-002
****

2.3
If you have light bulbs marked 40 watts, 60 watts and 100 watts, which one will use electrical energy the fastest?
1) They will all be the same
2) The 40 watt bulb
3) The 100 watt bulb
4) The 60 watt bulb
<3>

B-005-003-003
****

3.7

What is the basic unit of electrical power?

1. The ampere
2. The volt
3. The watt
4. The ohm

<3>

B-005-003-004
****

2.14

Which electrical circuit will have no current?

1. A short circuit
2. An open circuit
3. A complete circuit
4. A closed circuit

<2>

B-005-003-005
****

2.14

Which electrical circuit uses too much current?

1. A dead circuit
2. A short circuit
3. A closed circuit
4. An open circuit

<2>

B-005-003-006
****

3.7

Power is expressed in:

1) Volts
2) amperes
3) watts
4) ohms

<3>

B-005-003-007

****

3.7

Which of the following two quantities should be multiplied together to find power?

1) Inductance and capacitance
2) Voltage and inductance
3) Voltage and current
4) Resistance and capacitance

<3>

B-005-003-008

****

3.7

Which two electrical units multiplied together give the unit "watts"?

1. Farads and henrys
2. Amperes and henrys
3. Volts and farads
4. Volts and amperes

<4>

B-005-003-009

****

2.6

A resistor in a circuit becomes very hot and starts to burn. This is because the resistor is dissipating too much:

1) voltage
2) resistance
3) current
4) power

<4>

B-005-003-010

****

3.8

High power resistors are usually large with heavy leads. The size aids the operation of the resistor by:

1) allowing higher voltage to be handled
2) increasing the effective resistance of the resistor
3) allowing heat to dissipate more readily
4) making it shock proof

<3>

B-005-003-011

****

3.8

The resistor that could dissipate the most heat would be marked:

1) 100 ohms
2) 2 ohms
3) 20 watts
4) 0.5 watt

<3>

B-005-004-001
****

3.2

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

1. 48 volts
2. 52 volts
3. 100 volts
4. 25 volts

<3>

B-005-004-002
****

3.2

How is the current in a DC circuit calculated when the voltage and resistance are known?

1.Current equals voltage divided by resistance
2.Current equals resistance multiplied by voltage
3.Current equals resistance divided by voltage
4.Current equals power divided by voltage

<1>

B-005-004-003
****

3.2

How is the resistance in a DC circuit calculated when the voltage and current are known?

1. Resistance equals current multiplied by voltage
2. Resistance equals voltage divided by current
3. Resistance equals power divided by voltage
4. Resistance equals current divided by voltage

<2>

B-005-004-004
****

3.2

How is the voltage in a DC circuit calculated when the current and resistance are known?

1. Voltage equals current divided by resistance
2. Voltage equals resistance divided by current
3. Voltage equals power divided by current
4. Voltage equals current multiplied by resistance

<4>

B-005-04-005
****

3.2

If a 12-volt battery supplies 0.25 ampere to a circuit, what is the circuit's resistance?

1. 3 ohms
2. 48 ohms
3. 12 ohms
4. 0.25 ohm

<2>

B-005-004-006

****

3.2

Calculate the value of resistance necessary to drop 100 volts with current flow of 0.8 milliamperes:

1) 125 kilohms
2) 125 ohms
3) 1250 ohms
4) 1.25 kilohms

<1>

Don't forget to change all values to standard units.

B-005-004-007

****

3.2

The voltage required to force a current of 4.4 amperes through a resistance of 50 ohms is:

1) 220 volts
2) 2220 volts
3) 22.0 volts
4) 0.220 volt

<1>

B-005-004-008

****

3.2

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

1) 2 amperes
2) 0.5 ampere
3) 0.005 ampere
4) 0.2 ampere

<4>

B-005-004-009

****

3.2

What voltage would be needed to supply a current of 200 ma, to operate an electric lamp which has a resistance of 25 ohms?

1. 5 volts
2. 8 volts
3. 175 volts
4. 225 volts

<1>

Don't forget to change all values to standard units.

B-005-004-010
****

3.2

The resistance of a circuit can be found by using one of the following:

1. R = E/I
2. R = I/E
3. R = E/R
4. R=EXI <1>

B-005-004-011
****

3.2

If a 3 volt battery supplies 300 ma to a circuit, the circuit resistance is:

1) 10 ohms
2) 9 ohms
3) 5 ohms
4) 3 ohms

<1>

Don't forget to change all values to standard units

B-005-005-001
****

3.4

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?

1. It equals the sum of the branch current through each resistor
2. It equals the average of the branch current through each resistor
3. It decreases as more parallel resistors are added to the circuit
4. It is the sum of each resistor's voltage drop multiplied by the total number of resistors

<1>

B-005-005-002 (NEW)
****

3.4

Three resistors, respectively rated at 10, 15, and 20 ohms respectively are connected in parallel across a 6 volt battery. Which statement is true

1) The current flowing through the 10 ohm resistance is less than that flowing through the 20 ohm resistance
2) The current flowing through the 10 ohm, 15 ohm, and 30 ohm separate resistances when added together equals the total current drawn from the battery.
3) The voltage drop across each resistance added together equals 6 volts
4) The voltage drop across the 20 ohm resistance is greater than the voltage across the 10 ohm resistance.

<2>

B-005-005-003
****

3.4

Total resistance in a parallel circuit:

1) is always less than the smallest resistance
2) depends upon the IR drop across each branch
3) could be equal to the resistance of one branch
4) depends upon the applied voltage

<1>

B-005-005-004
****

3.2/3.4

Two resistors are connected in parallel and are connected across a 40 volt battery. If each resistor is 1000 ohms, the total current is:

1) 80 milliamperes
2) 40 milliamperes
3) 80 amperes
4) 40 amperes

<1>

Don't forget to change all values to standard units

B-005-005-005
****

3.4

The total resistance of resistors connected in series is:

1) 1. greater than the resistance of any one resistor
   2. less than the resistance of any one resistor
   3. equal to the highest resistance present
   4. equal to the lowest resistance present

<1>

B-005-005-006
****

3.4

Five 10 ohm resistors connected in series equals:

1. 50 ohms
2. 5 ohms
3. 10 ohms
4. 1 ohm

<1>

B-005-005-007

****

3.4

Which series combination of resistors would replace a single 120 ohm resistor?

1) six 22 ohm
2) two 62 ohm
3) five 100 ohm
4) five 24 ohm

<4>

B-005-005-008

****

3.4

If ten resistors of equal value were wired in parallel, the total resistance would be:

1) 10/R
2) R/10
3) 10 x R
4) 10 + R

<2>

B-005-005-009

****

3.4

The total resistance of four 68 ohm resistors wired in parallel is:

1) 12 ohms
2) 34 ohms
3) 272 ohms
4) 17 ohms

<4>

B-005-005-010

****

3.4

Two resistors are in parallel. Resistor A carries twice the current of resistor B, which means that:

1) the voltage across B is twice that across A
2) the voltage across A is twice that across B
3) A has half the resistance of B
4) B has half the resistance of A

<3>

B-005-005-011

****

3.4

The total current in a parallel circuit is equal to the:

1) source voltage divided by the value of one of the resistive elements
2) sum of the currents through all the parallel branches
3) source voltage divided by the sum of the resistive elements
4) current in any one of the parallel branches

<2>

B-005-006-001

****

3.8

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

1) For better response time
2) For a higher current gain
3) For less impedance in the circuit
4) For greater power dissipation

<4>

B-005-006-002

****

3.7

How many watts of electrical power are used by a 12-VDC light bulb that draws 0.2 ampere?

1) 2.4 watts
2) 60 watts
3) 24 watts
4) 6 watts

<1>

B-005-006-003

****

3.7

The DC input power of a transmitter operating at 12 volts and drawing 500 milliamps would be:

1) 20 watts
2) 6 watts
3) 500 watts
4) 12 watts

<2>

Don't forget to change all values to standard units

B-005-006-004

****

3.8

When two 500 ohm 1 watt resistors are connected in series, the maximum total power that can be dissipated by the resistors is:

1. 1 watt
2. 2 watts
3. 1/2 watt
4. 4 watts

<2>

B-005-006-005

****

3.8

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

1) 1/2 watt
2) 1 watt
3) 2 watts
4) 4 watts

<3>

B-005-006-006 (NEW)

****

3.7

If the voltage applied to two resistors in series is doubled, how much will the total power change?

1) increase four times
2) decrease to half
3) double
4) no change

<1>

Consider two 5 ohm resistors and with 10 volts applied to them. Since the resistors are in series the total resistance is 10 ohms. Since we know resistance and voltage, P = E^2/R = (10)(10)/10 = 10 watts. When we double the voltage to 20 volts and crunch the numbers P = (20)(20)/10 = 40 watts. The power has increased four times, answer #1

B-005-006-007 (NEW)

****

3.4, 3.8

Which combination of resistors could make a 50 ohms dummy load capable of dissipating 5 watts

1. Four 2-watt 200 ohms resistors in parallel
2. Two 5-watt 100 ohms resistors in series
3. Two 2-watt 25 ohms resistors in series
4. Ten quarter-watt 500 ohms resistors in parallel

<1>

In #2 the resistors are in series and the total resistance is 200 ohms, more than required. In #3 the resistors are in series, giving 50 ohms, but the total wattage is 4 watts, less than the 5 watts required. In #4 the total resistance is 50 Ohms, but wattage is the sum of all the wattage, 2.5 watts. In #1 the total resistance is 50 ohms and the total wattage is 8 watts, more than required.

B-005-006-008 (NEW)

****

3.7

A 12 volt light bulb is rated at a power of 30 watts. The current drawn would be:

1) 30/12 amps
2) 18 amps
3) 360 amps
4) 12/30 amps

<1>

Since we know voltage and power the formula to use to calculate current is P/E, answer #1.

B-005-006-009 (NEW)

****

3.7

If two 10 ohm resistors are connected in series with a 10 volt battery, the power consumption would be:

1. 5 watts
2. 10 watts
3. 20 watts
4. 100 watts

<1>

Total resistance 20 ohms and voltage is 10 V. The formula we use to calculate power is Power:= E^2/R = (10)(10)/20 = 5 watts, answer #1

B-005-006-010

****

3.4/3.8

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:

1. the same resistance but lesser power rating
2. greater resistance and similar power rating
3. the same resistance but greater power rating
4. lesser resistance and similar power rating

<3>

B-005-006-011

****

3.8

Resistor wattage ratings are:

1) calculated according to physical size
2) expressed in joules per second
3) determined by heat dissipation qualities
4) variable in steps of one hundred

<3>

B-005-007-001

****

5.2

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

1) Speed
2) Pulse rate
3) Frequency
4) Inductance

<3>

B-005-007-002

****

11.15

Approximately what frequency range can most humans hear?

1) 20 000 - 30 000 Hz
2) 200 - 200 000 Hz
3) 20 - 20 000 Hz
4) 0 - 20 Hz

<3>

B-005-007-003

****

11.15

Why do we call signals in the range 20 Hz to 20 000 Hz audio frequencies?

1) Because the human ear cannot sense anything in this range
2) Because this range is too low for radio energy
3) Because the human ear can sense radio waves in this range
4) Because the human ear can sense sounds in this range

<4>

B-005-007-004

****

5.4

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

1) Radio
2) Audio
3) Hyper
4) Super-high

<1>

B-005-007-005

****

5.3

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

1) Wavelength
2) Wave speed
3) Waveform
4) Wave spread

<1>

B-005-007-006
****

5.3
What happens to a signal's wavelength as its frequency increases?

1. It gets longer
2. It stays the same
3. It disappears
4. It gets shorter

<4>

B-005-007-007
****

5.3

What happens to a signal's frequency as its wavelength gets longer?

1) It disappears
2) It stays the same
3) It goes down
4) It goes up

<3>

B-005-007-008
****

5.2
What does 60 hertz (Hz) mean?

1. 6000 metres per second
2. 60 cycles per second
3. 60 metres per second
4. 6000 cycles per second

<2>

B-005-007-009
****

5.2
If the frequency of the waveform is 100 Hz, the time for one cycle is:

1. 10 seconds
2. 0.000 1 second
3. 0.01 second
4. 1 second

<3>

B-005-007-010
****

5.2
Current in an AC circuit goes through a complete cycle in 0.1 second. This means the AC has a frequency of:

1. 10 Hz
2. 1 Hz
3. 100 Hz
4. 1000 Hz

<1>

B-005-007-011
****

5.4
A signal is composed of a fundamental frequency of 2 kHz and another of 4 kHz. This 4 kHz signal is referred to as:

1) a fundamental of the 2 kHz signal
2) the DC component of the main signal
3) a dielectric signal of the main signal
4) a harmonic of the 2 kHz signal

<4>

B-005-008-001
****

A1.7
A two-times increase in power results in a change of how many dB?

1) 6 dB higher
2) 3 dB higher
3) dB higher
4) 1 dB higher

<2>

B-005-008-002
****

A1.7
How can you decrease your transmitter's power by 3 dB?

1. Divide the original power by 1.5
2. Divide the original power by 3
3. Divide the original power by 4
4. Divide the original power by 2

<4>

B-005-008-003

****

A1.7

How can you increase your transmitter's power by 6 dB?

1. Multiply the original power by 3
2. Multiply the original power by 2
3. Multiply the original power by 4
4. Multiply the original power by 1.5

<3>

B-005-008-004

****

A1.7

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?

1) S9 plus 3
2) dB S9 minus 10
3) dB S9 plus 5 dB
4) S 9

< 4 >

B-005-008-005

****

A1.7

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?

1. S9 plus 10 dB
2. S9 plus 5 dB
3. S9 plus 3
4. dB S9

<1>

B-005-008-006

****

A1.7

The unit "decibel" is used to indicate:

1. an oscilloscope wave form
2. a mathematical ratio
3. certain radio waves
4. a single side band signal

<2>

B-005-008-007

****

A1.7

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

1. 3 0
2. 6
3. 3
4. 1

<3>

B-005-008-008

****

A1.7

The power of a transmitter is increased from 5 watts to 50 watts by a linear amplifier. The power gain, expressed in dB, is:

1. 30 dB
2. 10dB
3. 40 Db
4. 20 dB

<2>

B-005-008-009

****

A1.7

You add a 9 dB gain amplifier to your 2 watt handheld. What is the power output of the combination?

1. 11 watts
2. 16 watts
3. 20 watts
4. 18watts

<2>

B-005-008-010

****

A1.7

The power of a transmitter is increased from 2 watts to 8 watts. This is a power gain of _____dB.

1. 6 dB
2. 3 dB
3. 8 dB
4. 9dB

<1>

B-005-008-011

****

A1.7

A local amateur reports your 100W 2 metre simplex VHF transmission as 30 dB over S9. To reduce your signal to S9, you would reduce your power to
watts.

1. 1 W
2. 10 W
3. 33.3 W
4. 100 mW

<4>

B-005-009-001

****

4.5

If two equal-value inductors are connected in series, what is their total inductance?

1) Half the value of one inductor
2) The same as the value of either inductor
3) The value of one inductor times the value of the other
4) Twice the value of one inductor

<4>

B-005-009-002

****

4.5

If two equal-value inductors are connected in parallel, what is their total inductance?

1) Twice the value of one inductor
2) The same as the value of either inductor
3) The value of one inductor times the value of the other
4) Half the value of one inductor

<4>

B-005-009-003

****

4.5

If two equal-value capacitors are connected in series, what is their total capacitance?

1. Twice the value of one capacitor
2. The same as the value of either capacitor
3. The value of one capacitor times the value of the other
4. Half the value of either capacitor

<4>

B-005-009-004
****

4.5

If two equal-value capacitors are connected in parallel, what is their total capacitance?

1) The same as the value of either capacitor
2) Twice the value of one capacitor
3) The value of one capacitor times the value of the other
4) Half the value of one capacitor

<2>

B-005-009-005
****

4.2

What determines the inductance of a coil?

1) The core material, the number of turns used to wind the core and the frequency of the current through the coil
2) The core diameter, the number of turns of wire used to wind the coil and the type of metal used for the wire
3) The core material, the core diameter, the length of the coil and the number of turns of wire used to wind the coil
4) The core material, the core diameter, the length of the coil and whether the coil is mounted horizontally or vertically

<3>

B-005-009-006
****

4.7/4.8

What determines the capacitance of a capacitor?

1) The material between the plates, the area of one side of one plate, the number of plates and the spacing between the plates
2) The material between the plates, the number of plates and the size of the wires connected to the plates
3) The number of plates, the spacing between the plates and whether the dielectric material is N type or P type
4) The material between the plates, the area of one plate, the number of plates and the material used for the protective coating

<1>

B-005-009-007
****

4.9

If two equal-value capacitors are connected in parallel, what is their capacitance?

1. The same value of either capacitor
2. The value of one capacitor times the value of the other
3. Half the value of either capacitor
4. Twice the value of either capacitor

<4>

B-005-009-008

****

4.5

To replace a faulty 10 millihenry choke, you could use two:

1) Two 20 millihenry chokes in series
2) Two 5 millihenry chokes in series
3) Two 30 millihenry chokes in parallel
4) Two 5 millihenry chokes in parallel

<2>

B-005-009-009

****

4.9

Three 15 microfarad capacitors are wired in series. The total capacitance of this arrangement is:

1) 45 microfarads
2) 12 microfarads
3) 5 microfarads
4) 18 microfarads

<3>

B-005-009-010

****

4.9

Which series combinations of capacitors would best replace a faulty 10 microfarad capacitor?

1) two 10 microfarad capacitors
2) two 20 microfarad capacitors
3) twenty 2 microfarad capacitors
4) ten 2 microfarad capacitors

<2>

B-005-009-011

****

4.9

The total capacitance of two or more capacitors in series is:

1) found by adding each of the capacitors together and dividing by the total number of capacitors
2) found by adding each of the capacitors together
3) always less than the smallest capacitor
4) always greater than the largest capacitor

<3>

B-005-010-001
****

4.12

How does a coil react to AC?

1. As the amplitude of the applied AC increases, the reactance decreases
2. As the amplitude of the applied AC increases, the reactance increases
3. As the frequency of the applied AC increases, the reactance increases
4. As the frequency of the applied AC increases, the reactance decreases

<3>

B-005-010-002
****

4.13

How does a capacitor react to AC?

1. As the frequency of the applied AC increases, the reactance increases
2. As the amplitude of the applied AC increases, the reactance increases
3. As the amplitude of the applied AC increases, the reactance decreases
4. As the frequency of the applied AC increases, the reactance decreases

<4>

B-005-010-003
****

4.13

The reactance of capacitors increases as:

1) applied voltage increases
2) AC frequency decreases
3) applied voltage decreases
4) AC frequency increases

<2>

B-005-010-004
****

4.14

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:

1. resonance
2. inductance
3. impedance
4. capacitance

<3>

B-005-010-005
****

4.13

Capacitive reactance:

1) decreases as frequency increases
2) applies only to series RLC circuits
3) increases as frequency increases
4) increases with the time constant

<1>

B-005-010-006
****

4.12

Inductive reactance may be increased by:

1. a decrease in the applied frequency
2. a decrease in the supplied current
3. an increase in the applied voltage
4. an increase in the applied frequency

<4>

B-005-010-007 (NEW)
****

4.12

What property allows a coil wound on a ferrite coil to mitigate (reduce) the effects of an offending radio signal?

1. Low reactance at audio frequencies
2. High reactance at audio frequencies
3. High reactance at radio frequencies
4. Low reactance at radio frequencies

<3>

This device is called a "choke", well-named as the higher the frequency the larger the inductive reactance or opposition to the flow of AC. Radio waves are complex alternating currents. As this question is dealing with radio signals we can ignore answers 1 and 2.

B-005-010-008 (NEW)
****

4.13

What property allows an RF bypass capacitor on an audio circuit to divert an offending radio signal?

1. High reactance at audio frequencies
2. Low reactance at radio frequencies
3. High reactance at radio frequencies
4. Low reactance at audio frequencies

<2>

It is all about frequency. Ignore answers 1 and 4 as they deal with audio frequencies, which are have much lower frequencies than radio waves. This question is talking about allowing RF, radio frequencies, to be diverted or allowed to flow in a desired direction. This means that one does not want to provide any opposition to the flow of the RF. In a capacitor the higher the frequency the smaller the capacitive reactance or opposition to the flow of AC. Radio waves are complex alternating currents.

B-005-010-009 (NEW)

****

4.13

What property allows an RF capacitor to have little effect on an audio circuit?

1) High reactance at high frequencies
2) Low reactance at low frequencies
3) High reactance at low frequencies
4) Low reactance at high frequencies

<3>

It is all about frequency. Audio circuits means audio frequencies (AF), which are have much lower frequencies than radio frequencies (RF). In a capacitor the higher the frequency the smaller the capacitive reactance or opposition to the flow of AC. To allow audio frequencies to flow unimpeded one uses a large capacitance to provide a low capacitive reactance. An RF by-pass capacitor is used to divert or force RF to flow unimpeded in a desired direction, in this case, away from or out of the audio circuit. This means the RF capacitor will have low value, as it will present a high reactance to the RF flow through the audio circuit.

B-005-010-010 (NEW)

****

4.12

What property allows an RF choke coil to have little effect on signals meant to pass through the coil.

1. Low reactance at high frequencies
2. High reactance at high frequencies
3. Low reactance at low frequencies
4. High reactance at low frequencies

<3>

It is all about frequency. The key phrase here is "signals meant to pass through the coil". An RF choke coil is an inductor. In an inductor the higher the frequency the larger the inductive reactance or opposition to the flow of AC.

B-005-010-011

****

4.12

In general, the reactance of inductors increases with:

1. increasing AC frequency
2. decreasing AC frequency
3. decreasing applied voltage
4. increasing applied voltage

<1>

B-005-011-001

****

4.6

If no load is attached to the secondary winding of a transformer, what is current in the primary winding called?

1. Magnetizing current
2. Direct current
3. Excitation current
4. Stabilizing current

<1>

B-005-011-002

****

3.7

A transformer operates a 6.3 volt 2 ampere light bulb from its secondary winding. The power consumed by the primary winding is approximately:

1) 13 watts
2) 6 watts
3) 8 watts
4) 3 watts

<1>

Power = E X I = 12.6 W consumed in the secondary. In a perfect system 12.6 W would be transferred from the primary to the secondary, about 13 W.

B-005-011-003

****

3.7

A transformer has a 240 volt primary that draws a current of 250 mA from the mains supply. Assuming no losses, what current would be available from a 12 volt secondary?

1) 215 amperes
2) 25 amperes
3) 50 amperes
4) 5 amperes

<4>

Same approach as the previous question, except you have to convert mA to A.

B-005-011-004

****

4.6

In a mains power transformer, the primary winding has 250 turns, and the secondary has 500. If the input voltage is 110 volts, the likely secondary voltage is:

1) 440 V
2) 220 V
3) 560 V
4) 24 V

<2>

B-005-011-005

****

4.1

The strength of the magnetic field around a conductor in air is:

1. inversely proportional to the diameter of the conductor
2. directly proportional to the diameter of the conductor
3. directly proportional to the current in the conductor
4. inversely proportional to the voltage on the conductor

<3>

B-005-011-006

****

4.1

Maximum induced voltage in a coil occurs when:

1. current is going through its greatest rate of change
2. the current through the coil is of a DC nature
3. current is going through its least rate of change
4. the magnetic field around the coil is not changing

<1>

B-005-011-007

****

4.1

The voltage induced in a conductor moving in a magnetic field is at a maximum when the movement is:

1) made in a counterclockwise
2) direction parallel to the lines of force
3) perpendicular to the lines of force
4) made in a clockwise direction

<2>

B-005-011-008

****

4.6

A 100% efficient transformer has a turns ratio of 1/5. If the secondary current is 50 mA, the primary current is:

1. 2 500 mA
2. 0.01 A
3. 0.25 A
4. 0.25mA

<3>

B-005-011-009
****

2.10

A force of repulsion exists between two _____ magnetic poles.

1. Unlike
2. positive
3. negative
4. like

<4>

B-005-011-010
****

2.10

A permanent magnet would most likely be made from:

1)Copper
2)Aluminum
3)Brass
4)steel
<4>

B-005-011-011
****

4.6

The fact that energy transfer from primary to secondary windings in a power transformer is not perfect is indicated by:

1) electrostatic shielding large
2) secondary currents
3) warm iron laminations
4)high primary voltages
<3>

B-005-012-001
****

4.15

Resonance is the condition that exists when:

1) inductive reactance and capacitive reactance are equal
2) inductive reactance is the only opposition in the circuit
3) the circuit contains no resistance
4) resistance is equal to the reactance

<1>

B-005-012-002
****

4.16

Parallel tuned circuits offer:

1) low impedance at resonance
2) zero impedance at resonance
3) an impedance equal to resistance of the circuit
4) very high impedance at resonance

<4>

B-005-012-003
****

4.15

Resonance is an electrical property used to describe:

1. an inductor
2. a set of parallel inductors
3. the results of tuning a varicap (varactor)
4. the frequency characteristic of a coil and capacitor circuit

<4>

B-005-012-004
****

4.16

A tuned circuit is formed from two basic components. These are:

1. resistors and transistors
2. directors and reflectors
3. diodes and transistors
4. inductors and capacitors

<4>

B-005-012-005
****

4.16

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:

1) resonant frequency
2) impedance frequency
3) inductive frequency
4) reactive frequency

<1>

B-005-012-006

****

4.16

In a parallel-resonant circuit at resonance, the circuit has a:

1) low impedance
2) low mutual inductance
3) high mutual inductance
4) high impedance

<4>

B-005-012-007

****

4.16

In a series resonant circuit at resonance, the circuit has:

1)low impedance
2)high impedance
3)low mutual inductance
4)high mutual inductance

<1>

B-005-012-008

****

4.16

A coil and an air-spaced capacitor are arranged to form a resonant circuit. The resonant frequency will remain the same if we:

1) increase the area of plates in the capacitor
2) replace the air dielectric with oil in the capacitor
3) wind more turns on the coil
4) add a resistor to the circuit

<4>

B-005-012-009

****

4.16

Resonant circuits in a receiver are used to:

1) filter direct current
2) select signal frequencies
3) increase power
4) adjust voltage levels

<2>

B-005-012-010

****

4.15

Resonance is the condition that exists when:

1) inductive reactance and capacitive reactance are equal and opposite in sign
2) inductive reactance is the only opposition in the circuit
3) the circuit contains no resistance
4) resistance is equal to the reactance

<1>

B-005-012-011

****

4.16

When a series LCR circuit is tuned to the frequency of the source, the:

1) line current lags the applied voltage
2) line current leads the applied voltage
3) line current reaches maximum
4) impedance is maximum

<3>

B-005-013-001

****

10.6

How is a voltmeter usually connected to a circuit under test?

1) In series with the circuit
2) In quadrature with the circuit
3) In phase with the circuit
4) In parallel with the circuit

<4>

B-005-013-002

****

10.6

How is an ammeter usually connected to a circuit under test?

1) In quadrature with the circuit
2) In series with the circuit
3) In phase with the circuit
4) In parallel with the circuit

<2>

B-005-013-003

****

2.18

What does a multimeter measure?

1) Resistance, capacitance and inductance
2) Voltage, current and resistance
3) Resistance and reactance
4) SWR and power

<2>

B-005-013-004

****

2.3

The correct instrument to measure plate current or collector current of a transmitter is:

1. an ohmmeter
2. a wattmeter
3. an ammeter
4. a voltmeter

<3>

B-005-013-005

****

10.6

Which of the following meters would you use to measure the power supply current drawn by a small hand-held transistorized receiver?

1) a DC ammeter
2) an RF ammeter
3) an RF power meter
4) an electrostatic voltmeter

<1>

B-005-013-006 (NEW)

****

10.6

When measuring current drawn from a DC power supply, it is true to say that the meter will act in circuit as:

1) a perfect conductor
2) a low value resistance
3) an extra current drain
4) an insulator

<2>

Any meter will provide a resistance, but it is negligible.

B-005-013-007

****

10.6

When measuring the current drawn by a receiver from a power supply, the current meter should be placed:

1) in series with both receiver power leads
2) in series with one of the receiver power leads
3) in parallel with both receiver power supply leads
4) in parallel with one of the receiver power leads

<2>

B-005-013-008

****

2.4

Potential difference is measured by means of:

1) a wattmeter
2) an ohmmeter
3) a voltmeter
4) an ammeter

<3>

B-005-013-09 (NEW)

****

2.3

The instrument used for measuring the flow of electrical current is the:

1. Faradmeter
2. Wattmeter
3. Ammeter
4. voltmeter

<3>

B-005-013-010 (NEW)

****

10.6

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

1. the voltmeter in series and ammeter in parallel
2. the voltmeter in parallel and ammeter in series
3. both voltmeter and ammeter in series
4. both voltmeter and ammeter in parallel

<2>

B-006-001-001

****

7.1

What connects your transceiver to your antenna?

1) The power cord
2) A ground wire
3) A transmission line
4) A dummy load

<3>

B-006-001-002

****

7.2

The characteristic impedance of a transmission line is determined by the:

1) length of the line
2) physical dimensions and relative positions of the conductors
3) frequency at which the line is operated
4) load placed on the line

<2>

B-006-001-003

****

7.2

The characteristic impedance of a 20 metre piece of transmission line is 52 ohms. If 10 metres were cut off, the impedance would be:

1) 52 ohms 2) 26 ohms 3) 39 ohms 4) 13 ohms

<1>

B-006-001-004

****

7.4

The impedance of a coaxial line:

1) can be the same for different diameter line
2) changes with the frequency of the energy it carries
3) is correct for only one size of line
4) is greater for larger diameter line

<1>

B-006-001-005

****

7.4

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

1. 300 ohm twin-lead
2. 600 ohm open-wire
3. 75 ohm twin-lead
4. coaxial cable

<4>

B-006-001-006

****

7.2

The characteristic impedance of a transmission line is:

1. the impedance of a section of the line one wavelength long
2. the dynamic impedance of the line at the operating frequency
3. the ratio of the power supplied to the line to the power delivered to the termination
4. equal to the pure resistance which, if connected to the end of the line, will absorb all the power arriving along it

<4>

B-006-001-007
****

7.4

A transmission line differs from an ordinary circuit or network in communications or signaling devices in one very important way. That important aspect is:

1) capacitive reactance
2) inductive reactance
3) propagation delay
4) resistance

<3>

B-006-001-008
****

7.3

The characteristic impedance of a parallel wire transmission line does not depend on the:

1) velocity of energy on the line
2) radius of the conductors
3) centre to centre distance between conductors
4) dielectric

<1>

B-006-001-009 (NEW)
****

7.2, 7.8

If the impedance terminating a transmission line differs significantly from the characteristic of the line, what will be observed at the input of the line?

1) An impedance nearly equal to the characteristic impedance
2) Some value of impedance influenced by line length
3) An infinite impedance
4) A negative impedance

<2>

If the line impedance and load impedance don't match, the input will see an impedance value that is a function of the line length. The mathematics to calculate the value of the impedance in this situation is more than a little demanding and then some!

B-006-001-010
****

7.3

What factors determine the characteristic impedance of a parallel-conductor antenna transmission line?

1. The distance between the centres of the conductors and the radius of the conductors
2. The distance between the centres of the conductors and the length of the line
3. The radius of the conductors and the frequency of the signal
4. The frequency of the signal and the length of the line

<1>

B-006-001-011
****

7.4
What factors determine the characteristic impedance of a coaxial antenna transmission line?

1) The ratio of the diameter of the inner conductor to the diameter of the braid
2) The diameter of the braid and the length of the line
3) The diameter of the braid and the frequency of the signal
4) The frequency of the signal and the length of the line
<1>

B-006-002-001
****

7.4
What is a coaxial cable?
1. Two wires side-by-side in a plastic ribbon
2. Two wires side-by-side held apart by insulating rods
3. Two wires twisted around each other in a spiral
4. A center wire inside an insulating material which is covered by a metal sleeve or shield
<4>

B-006-002-002
****

7.3
What is parallel-conductor transmission line?
1) Two wires twisted around each other in a spiral
2) A center wire inside an insulating material which is covered by a metal sleeve or shield
3) A metal pipe which is as wide or slightly wider than a wavelength of the signal it carries
4) Two wires side-by-side held apart by insulating rods
<4>

B-006-002-003
****

7.3
What kind of antenna transmission line is made of two conductors held apart by insulated rods?

1) Open-conductor ladder line
2) Coaxial cable
3) Twin lead in a plastic ribbon
4) Twisted pair
<1>

B-006-002-004
****

7.7
What does the term "balun" mean?

1. Balanced unloader
2. Balanced to unbalanced
3. Balanced unmodulator
4. Balanced antenna network

<2>

B-006-002-005
****

7.7 – Fig 7.8/7.
Where would you install a balun to feed a dipole antenna with 50-ohm coaxial cable?

1. Between the coaxial cable and the antenna
2. Between the transmitter and the coaxial cable
3. Between the antenna and the ground
4. Between the coaxial cable and the ground

<1>

B-006-002-006
****

7.4

What is an unbalanced line?

1. Transmission line with neither conductor connected to ground
2. Transmission line with both conductors connected to ground
3. Transmission line with both conductors connected to each other
4. Transmission line with one conductor connected to ground

<4>

B-006-002-007
****

7.7

What device can be installed to feed a balanced antenna with an unbalanced transmission line?

1) A triaxial transformer
2) A balun
3) A wavetrap
4) A loading coil

<2>

B-006-002-008
****

7.4
A flexible coaxial line contains:

1. four or more conductors running parallel
2. only one conductor
3. braid and insulation around a central conductor
4. two parallel conductors separated by spacers

<3>

B-006-002-009
****

7.3

A balanced transmission line:

1. is made of two parallel wires
2. has one conductor inside the other
3. carries RF current on one wire only
4. is made of one conductor only

<1>

B-006-002-010 (NEW)
****

7.7

A 75 ohm transmission line could be matched to the 300 ohm feedpoint of an antenna:

1. with an extra 250 ohm resistor
2. by using a 4 to 1 impedance transformer/balun
3. by using a 4 to 1 trigatron
4. by inserting a diode in one leg of the antenna

<2>

B-006-002-011 (NEW)
****

7.3

What kind of antenna transmission line can be constructed using two conductors which are maintained a uniform distance apart using insulated spreaders?

1. Coaxial cable
2. 75 ohm twin-lead
3. 600 ohm open-wire
4. 300 ohm twin-lead

<3>

B-006-003-001 (NEW)
****

7.4

Why does coaxial cable make a good antenna transmission line?

1. It is weatherproof, and its impedance is higher than that of most amateur antennas
2. It is weatherproof, and its impedance matches most amateur antennas
3. It can be used near metal objects, and its impedance is higher than that of most amateur antennas
4. You can make it at home, and its impedance matches most amateur antennas

<2>

B-006-003-002
****

7.4

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

1) Ladder-line
2) Twisted pair
3) Coaxial cable
4) Twin lead

<3>

B-006-003-003

****

7.3

What are some reasons not to use parallel-conductor transmission line?

1) You must use an impedance-matching device with your transceiver, and it does not work very well with a high SWR
2) It does not work well when tied down to metal objects, and it cannot operate under high power
3) It does not work well when tied down to metal objects, and you must use an impedance-matching device with your transceiver
4) It is difficult to make at home, and it does not work very well with a high SWR

<3>

B-006-003-004

****

7.5

What common connector usually joins RG-213 coaxial cable to an HF transceiver?

1) A PL-0259 connector
2) An F-type cable connector
3) A banana plug connector
4) A binding post connector

<1>

B-006-003-005

****

7.5

What common connector usually joins a hand-held transceiver to its antenna?

1) A BNC connector
2) A PL-0259 connector
3) An F-type cable connector
4) A binding post connector

<1>

B-006-003-006

****

7.5

Which of these common connectors has the lowest loss at UHF?

1) An F-type cable connector
2) A BNC connector
3) A PL-0259 connector
4) A type-N connector

<4>

B-006-003-007

****

7.4

If you install a 6 metre Yagi antenna on a tower 50 metres from your transmitter, which of the following transmission lines is best?

1. RG-174
2. RG-59
3. RG-213
4. RG-58

<3>

B-006-003-008

****

7.5

Why should you regularly clean, tighten and re-solder all antenna connectors?

1) To help keep their contact resistance at a minimum
2) To keep them looking nice
3) To keep them from getting stuck in place
4) To increase their capacitance

<1>

B-006-003-009

****

7.4

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

1) 75 ohm twin-lead
2) 600 ohm open-wire
3) Coaxial cable
4) 300 ohm twin-lead

<3>

B-006-003-010

****

7.4

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

1) 300 ohm twin-lead
2) 600 ohm open-wire
3) 75 ohm twin-lead
4) Coaxial cable

<4>

B-006-003-011
****

7.3
TV twin-lead transmission line can be used for a transmission line in an amateur station. The impedance of this line is approximately:
1) 600 ohms
2) 50 ohms
3) 300 ohms
4) 70 ohms
<3>

B-006-004-001
****

7.4
Why should you use only good quality coaxial cable and connectors for a UHF antenna system?
1. To keep television interference high
2. To keep the power going to your antenna system from getting too high
3. To keep the standing wave ratio of your antenna system high
4. To keep RF loss low
<4>

B-006-004-002
****

7.3
What are some reasons to use parallel-conductor transmission line?
1. It will operate with a high SWR, and has less loss than coaxial cable.
2. It has low impedance and works with a high SWR
3. It will operate with a high SWR, and it works well when tied down to metal objects
4. It has a low impedance, and has less loss than coaxial cable
<1>

B-006-004-003
****

7.6
If your transmitter and antenna are 15 metres apart, but are connected by 65 metres of RG-58 coaxial cable, what should be done to reduce transmission line loss?
1. Shorten the excess cable so the transmission line is an odd number of wavelengths long
2. Shorten the excess cable
3. Roll the excess cable into a coil which is as small as possible
4. Shorten the excess cable so the transmission line is an even number of wavelengths long
<2>

B-006-004-004

****

7.6

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

1. Signal loss decreases as length increases
2. Signal loss increases as length increases
3. Signal loss is the least when the length is the same as the signal's wavelength
4. Signal loss is the same for any length of transmission line

<2>

B-006-004-005

****

7.6

As the frequency of a signal is changed, what happens to signal loss in a transmission line?

1. Signal loss increases with decreasing frequency
2. Signal loss increases with increasing frequency
3. Signal loss is the least when the signal's wavelength is the same as the feedline's length
4. Signal loss is the same for any frequency

<2>

B-006-004-006

****

7.6

Losses occurring on a transmission line between transmitter and antenna results in:

1) an SWR reading of 1:1
2) less RF power being radiated
3) reflections occurring in the line
4) the wire radiating RF energy

<2>

B-006-004-007

****

7.3

The lowest loss transmission line on HF is:

1) open-wire
2) 75 ohm twin-lead
3) coaxial cable
4) 300 ohm twin-lead

<1>

B-006-004-008

****

7.6

In what values are RF transmission line losses expressed?

1) ohms per MHz
2) dB per MHz
3) ohms per metre
4) dB per unit length

<4>

B-006-004-009
****

7.6
If the length of coaxial transmission line is increased from 20 metres (65.6 ft) to 40 metres (131.2 ft), how would this affect the line loss?

1. It would be increased by 100%
2. It would be reduced by 10%
3. It would be increased by 10%
4. It would be reduced to 50%

<1>

B-006-004-010
****

7.6
If the frequency is increased, how would this affect the loss on a transmission line?

1) It is independent of frequency
2) It would increase
3) It depends on the line length
4) It would decrease

<2>

B-006-005-001
****

7.8
What does an SWR reading of 1:1 mean?

1) best impedance match has been attained
2) antenna for another frequency band is probably connected
3) power is going to the antenna
4) SWR meter is broken

<1>

B-006-005-002
****

7.8
What does an SWR reading of less than 1.5:1 mean?
1)A fairly good impedance match
2)An impedance match which is too low
3)An impedance mismatch; something may be wrong with the antenna system
4)An antenna gain of 1.5

<1>

B-006-005-003
****

11.6

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

1) A negative reading
2) No reading at all
3) A jumpy reading
4) A very low reading

<3>

B-006-005-004
****

11.6

What does a very high SWR reading mean?

1) The transmitter is putting out more power than normal, showing that it is about to go bad
2) The antenna is the wrong length, or there may be an open or shorted connection somewhere in the transmission line
3) There is a large amount of solar radiation, which means very poor radio conditions
4) The signals coming from the antenna are unusually strong, which means very good radio conditions

<2>

B-006-005-005
****

7.8

What does standing-wave ratio mean?

1 1. The ratio of maximum to minimum voltages on a transmission line
2. The ratio of maximum to minimum inductances on a transmission line
3. The ratio of maximum to minimum resistances on a transmission line
4. The ratio of maximum to minimum impedances on a transmission line

<1>

B-006-005-006
****

7.8

If your antenna transmission line gets hot when you are transmitting, what might this mean?

1. You should transmit using less power
2. The conductors in the transmission line are not insulated very well
3. The transmission line is too long
4. The SWR may be too high, or the transmission line loss may be high

<4>

B-006-005-007
****

7.8

If the characteristic impedance of the feedline does not match the antenna input impedance then:

1) heat is produced at the junction
2) the SWR reading falls to 1:1
3) the antenna will not radiate any signal
4) standing waves are produced in the feedline

<4>

B-006-005-008

****

7.8

The result of the presence of standing waves on a transmission line is:

1) perfect impedance match between transmitter and feedline
2) maximum transfer of energy to the antenna from the transmitter
3) lack of radiation from the transmission line
4) reduced transfer of RF energy to the antenna

<4>

B-006-005-009

****

7.8

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

1) comparing forward and reflected voltage
2) measuring radiated RF energy
3) measuring the conductor temperature
4) inserting a diode in the transmission line

<1>

B-006-005-010

****

7.8

A resonant antenna having a feed point impedance of 200 ohms is connected to a transmission line and transmitter which have an impedance of 50 ohms. What will the standing wave ratio of this system be?

1. 6:1
2. 3:1
3. 4:1
4. 5:1

<3>

B-006-005-011

****

7.3

The type of transmission line best suited to operating at a high standing wave ratio is:

1) 75 ohm twin-lead
2) 600 ohm open-wire
3) coaxial line
4) 300 ohm twin-lead

<2>

B-006-006-001

****

7.8/11.10

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

1) An antenna tuner
2) An SWR meter
3) A low pass filter
4) A high pass filter

<1>

B-006-006-002

****

11.6

What does an antenna matching unit do?

1. It matches a transceiver to a mismatched antenna system
2. It helps a receiver automatically tune in stations that are far away
3. It switches an antenna system to a transmitter when sending, and to a receiver when listening
4. It switches a transceiver between different kinds of antennas connected to one transmission line

<1>

B-006-006-003

****

11.6

What would you use to connect a coaxial cable of 50 ohms impedance to an antenna of 35 ohms impedance?

1) An SWR meter
2) An impedance-matching device
3) A low pass filter
4) A terminating resistor

<2>

B-006-006-004

****

4.14

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

1) When air wound transformers are used instead of iron-core transformers
2) When the power-supply fuse rating equals the primary winding current
3) When the impedance of the load is equal to the impedance of the source
4) When the load resistance is infinite

<3>

B-006-006-005

****

4.14

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

1) The electrical load is shorted
2) The source delivers maximum power to the load
3) No current can flow through the circuit
4) The source delivers minimum power to the load

<2>

B-006-006-006

****

4.14

Why is impedance matching important?

1) So the load will draw minimum power from the source
2) To ensure that there is less resistance than reactance in the circuit
3) To ensure that the resistance and reactance in the circuit are equal
4) So the source can deliver maximum power to the load

<4>

B-006-006-007
****

4.14

To obtain efficient power transmission from a transmitter to an antenna requires:

1) high load impedance
2) low ohmic resistance
3) matching of impedances
4) inductive impedance

<3>

B-006-006-008
****

4.14

To obtain efficient transfer of power from a transmitter to an antenna, it is important that there is a:

1) high load impedance
2) matching of impedance
3) proper method of balance
4) low ohmic resistance

<2>

B-006-006-009
****

7.8

If an antenna is correctly matched to a transmitter, the length of transmission line:

1. must be a full wavelength long
2. must be an odd number of quarter-wave
3. must be an even number of half-waves
4. will have no effect on the matching

<4>

B-006-006-010
****

4.14

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

1) ensure that the radiated signal has the intended polarization
2) transfer the maximum amount of power to the antenna
3) prevent frequency drift
4) overcome fading of the transmitted signal

<2>

B-006-006-011
****

7.6/7.7/7.8

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?

1. 2:1
2. 4:1
3. 10:1
4. 6:1

<4>

B-006-007-001
****

8.2

What does horizontal wave polarization mean?

1) The electric and magnetic lines of force of a radio wave are perpendicular to the earth's surface
2) The electric lines of force of a radio wave are perpendicular to the earth's surface
3) The electric lines of force of a radio wave are parallel to the earth's surface
4) The magnetic lines of force of a radio wave are parallel to the earth's surface

<3>

B-006-007-002
****

8.2

What does vertical wave polarization mean?

1) The magnetic lines of force of a radio wave are perpendicular to the earth's surface
2) The electric lines of force of a radio wave are perpendicular to the earth's surface
3) The electric and magnetic lines of force of a radio wave are parallel to the earth's surface
4) The electric lines of force of a radio wave are parallel to the earth's surface

<2>

B-006-007-003
****

8.6

What electromagnetic wave polarization does a Yagi antenna have when its elements are parallel to the earth's surface?

1) Helical
2) Horizontal
3) Vertical
4) Circular

<2>

B-006-007-004
****

8.2

What electromagnetic wave polarization does a half-wavelength antenna have when it is perpendicular to the earth's surface?

1) Circular
2) Horizontal
3) Parabolical
4) Vertical

<4>

B-006-007-005 (NEW)

****

8.2

Polarization of an antenna is determined by:

1) the height of the antenna
2) the orientation of the electric field relative to the Earth's surface.
3) the type of antenna
4) the magnetic field

<2>

B-006-007-006

****

8.3

An isotropic antenna is a:

1. hypothetical point source
2. infinitely long piece of wire
3. dummy load
4. half-wave reference dipole

<1>

B-006-007-007

****

8.3

What is the antenna radiation pattern for an isotropic radiator?

1) A parabola
2) A cardioid
3) A unidirectional cardioid
4) A sphere

<4>

B-006-007-008

****

8.9

VHF signals from a mobile station using a vertical whip antenna will normally be best received using a:

1) random length of wire
2) horizontal ground-plane antenna
3) vertical ground-plane antenna
4) horizontal dipole antenna

<3>

B-006-007-009

****

8.6

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

1) fed with the correct type of RF
2) too near to the ground
3) parallel with the ground
4) mounted vertically

<4>

B-006-007-010

****

8.6

If an electromagnetic wave leaves an antenna vertically polarized, it will arrive at the receiving antenna, by ground wave:

1) polarized at right angles to original
2) vertically polarized
3) horizontally polarized
4) polarized in any plane

<2>

B-006-007-011

****

8.6

Compared with a horizontal antenna, a vertical antenna will receive a vertically polarized radio wave:

1) at weaker strength
2) without any comparative difference
3) if the antenna changes the polarization
4) at greater strength

<4>

B-006-008-001

****

8.8

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

1) It decreases
2) It increases
3) It stays the same
4) It disappears

<1>

B-006-008-002 (NEW)

****

8.8

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

1) It stays the same
2) It increases
3) It disappears
4) It decreases

<2>

Frequency and wavelength are inversely proportional. As one increases the other deceases. As you shorten an antenna you shorten the wavelength with which is resonant. The frequency with which is resonant increases.

B-006-008-003
****

5.4
The wavelength for a frequency of 25 MHz is:
1. 15 metres (49.2 ft)
2. 4 metres (13.1 ft)
3. 12 metres (39.4 ft)
4. 32 metres (105 ft)

<3>

B-006-008-004
****

5.4
The velocity of propagation of radio frequency energy in free space is:

1. 300 000 kilometres per second
2. 3000 kilometres per second
3. 150 kilometres per second
4. 186 000 kilometres per second

<1>

B-006-008-005
****

8.5
Adding a series inductance to an antenna would:
1. increase the resonant frequency
2. have little effect
3. decrease the resonant frequency
4. have no change on the resonant frequency

<3>

An inductance is a coil of wire, so adding an inductance in series with the antenna means that you are lengthening the antenna. The longer the antenna the lower the resonant frequency.

B-006-008-006 NEW)
****

8.5
The resonant frequency of an antenna may be increased by:
1) lengthening the radiating element
2) shorteneing the radiating element
3) lowering the radiating element
4) increasing the height the radiating element

<2>

Frequency and wavelength are inversely proportional. As one increases the other deceases. As you shorten an antenna you shorten the wavelength with which is resonant. Since you want a higher frequency you will be producing a shorter wavelength and thus require a shorter antenna.

B-006-008-007
****

5.4

The speed of a radio wave:

1) is infinite in space
2) is the same as the speed of light
3) is always less than half speed of light
4) varies directly with frequency

<2>

B-006-008-008
****

8.5

At the end of suspended antenna wire, insulators are used. These act to:

1) limit the electrical length of the antenna
2) increase the effective antenna length
3) allow the antenna to be more easily held vertically
4) prevent any loss of radio waves by the antenna

<1>

B-006-008-009
****

8.5

To lower the resonant frequency of an antenna, the operator should:

1) shorten it
2) lengthen it
3) ground one end
4) centre feed it with TV ribbon feeder

<2>

Frequency and wavelength are inversely proportional.

B-006-008-010
****

8.8

One solution to multiband operation with a shortened radiator is the "trap dipole" or trap vertical. These "traps" are actually:

1) large wire-wound resistors
2) a coil and capacitor in parallel
3) coils wrapped around a ferrite rod
4) hollow metal cans

<2>

B-006-008-011
****

5.4

The wavelength corresponding to a frequency of 2 MHz is:

1) 360 m (1181 ft)
2) 150 m (492 ft)
3) 1500 m (4921 ft)
4) 30 m (98 ft)

<2>

B-006-009-001
****

8.10

What is a parasitic beam antenna?

1) An antenna where the driven element obtains its radio energy by induction or radiation from director elements
2) An antenna where all elements are driven by direct connection to the transmission line
3) An antenna where some elements obtain their radio energy by induction or radiation from a driven element
4) An antenna where wave traps are used to magnetically couple the elements <3>

B-006-009-002
****

8.10

How can the bandwidth of a parasitic beam antenna be increased?

1) Use traps on the elements
2) Use larger diameter elements
3) Use tapered-diameter elements
4) Use closer element spacing

<2>

B-006-009-003 (NEW)
****

8.10

If a parasitic element slightly shorter than a horizontal dipole is placed parallel to the dipole 0.1 wavelength away it and at the same height, what effect will this have on the antenna's radiation pattern?

1) A major lobe will develop in the horizontal plane, from the dipole toward the parasitic element
2) A major lobe will develop in the horizontal plane, parallel to the two elements
3) A major lobe will develop in the vertical plane, away from the ground
4) The radiation pattern will not be affected

<1>

B-006-009-004 (NEW)
****

8.10

If a parasitic element slightly longer than a horizontal dipole is placed parallel to the dipole 0.1 wavelength away from it and at the same height, what effect will this have on the antenna's radiation pattern?

1) A major lobe will develop in the horizontal plane, parallel to the two elements
2) A major lobe will develop in the vertical plane, away from the ground
3) A major lobe will develop in the horizontal plane, from the parasitic element, toward the dipole
4) The radiation pattern will not be affected

<3>

B-006-009-005

****

8.14

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

1) bandwidth
2) front-to-back ratio
3) impedance
4) polarization

<1>

B-006-009-006

****

8.3

Approximately how much gain does a half-wave dipole have over an isotropic radiator?

1) 1.5 dB
2) 3.0 dB
3) 6.0 dB
4) 2.1 dB

<4>

B-006-009-007

****

8.3

What is meant by antenna gain?

1) The numerical ratio of the signal in the forward direction to the signal in the back direction
2) The numerical ratio of the amount of power radiated by an antenna compared to the transmitter output power
3) The final amplifier gain minus the transmission line losses
4) The numerical ratio relating the radiated signal strength of an antenna to that of another antenna

<4>

B-006-009-008

****

8.14

What is meant by antenna bandwidth?

1. Antenna length divided by the number of elements
2. The angle between the half- power radiation points
3. The angle formed between two imaginary lines drawn through the ends of the elements
4. The frequency range over which the antenna may be expected to perform well

<4>

B-006-009-009

****

8.6

In free space, what is the radiation characteristic of a half-wave dipole?

1. Minimum radiation from the ends, maximum broadside
2. Maximum radiation from the ends, minimum broadside
3. Omnidirectional
4. Maximum radiation at 45 degrees to the plane of the antenna

<1>

B-006-009-010

****

8.3

The gain of an antenna, especially on VHF and above, is quoted in dBi. The "i" in this expression stands for:

1) Isotropic
2) Ideal
3) Ionosphere
4) Interpolated

<1>

B-006-009-011

****

8.10

The front-to-back ratio of a beam antenna is:

1) the forward power of the major lobe to the power in the backward direction both being measured at the 3 dB points
2) the ratio of the maximum forward power in the major lobe to the maximum backward power radiation
3) undefined
4) the ratio of the forward power at the 3 dB points to the power radiated in the backward direction

<2>

B-006-010-001

****

8.5

How do you calculate the length in metres (feet) of a quarter-wavelength antenna?

1. Divide 468 (153) by the antenna's operating frequency (in MHz)
2. Divide 300 (982) by the antenna's operating frequency (in MHz)
3. Divide 71.5 (234) by the antenna's operating frequency (in MHz)
4. Divide 150 (491) by the antenna's operating frequency (in MHz)

<3>

B-006-010-002

****

8.5

If you made a quarter-wavelength vertical antenna for 21.125 MHz, how long would it be?

1. 3.6 metres (11.8 ft)
2. 3.36 metres (11.0 ft)
3. 7.2 metres (23.6 ft)
4. 6.76 metres (22.2 ft)

<2>

B-006-010-003

****

8.5

If you made a half-wavelength vertical antenna for 223 MHz, how long would it be?

1. 64 cm (25.2 in)
2. 128 cm (50.4 in)
3. 105 cm (41.3 in)
4. 134.6cm(53in)

<1>

We are dealing with a frequency above 30 MHz so we use the following relationship: wavelength = 300/f. Since we want a half-wavelength antenna we use wavelength = 150/f. Our trusty calculator tells us that 150/223 = 0.673 m to three decimal places. Since the answers above are expressed in centimetres 0.673 m = 67.3 cm. The only answer that seems close is #1. It seems as if IC used the wrong formula in solving this, 143/f, which applies for frequencies below 30 MHz. If this question shows up on your exam remember this warning and the answer that IC wants,#1!

B-006-010-004

****

8.9

Why is a 5/8-wavelength vertical antenna better than a 1/4-wavelength vertical antenna for VHF or UHF mobile operations?

1) A 5/8-wavelength antenna has less corona loss
2) A 5/8-wavelength antenna has more gain
3) A 5/8-wavelength antenna is easier to install on a car
4) A 5/8-wavelength antenna can handle more power

<2>

B-006-010-005

****

8.9

If a magnetic-base whip antenna is placed on the roof of a car, in what direction does it send out radio energy?

1) Most of it is aimed high into the sky
2) Most of it goes equally in two opposite directions
3) It goes out equally well in all horizontal directions
4) Most of it goes in one direction

<3>

B-006-010-006

****

8.9

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

1) It increases the radiation angle
2) It brings the feed point impedance closer to 300 ohms
3) It brings the feed point impedance closer to 50 ohms
4) It lowers the radiation angle

<3>

B-006-010-007
****

8.9

What happens to the feed point impedance of a ground-plane antenna when its radials are changed from horizontal to downward-sloping?

1) It increases
2) It decreases
3) It stays the same
4) It approaches zero

<1>

B-006-010-008
****

8.9

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

1) 300 ohms balanced transmission line
2) 75 ohms balanced transmission line
3) 300 ohms coaxial cable
4) 50 ohms coaxial cable

<4>

B-006-010-009
****

8.9

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

1) receive signals equally well from all compass points around it
2) be very sensitive to signals coming from horizontal antennas
3) require few insulators
4) be easy to feed with TV ribbon feeder

<1>

B-006-010-010
****

8.9

Why is a loading coil often used with an HF mobile vertical antenna?

1) To tune out capacitive reactance
2) To lower the losses
3) To lower the Q
4) To improve reception

<1>

B-006-010-011
****

8.9

What is the main reason why so many VHF base and mobile antennas are 5/8 of a wavelength?

1) The angle of radiation is high giving excellent local coverage
2) The angle of radiation is low
3) It is easy to match the antenna to the transmitter
4) It's a convenient length on VHF

<2>

B-006-011-001
****

8.10

How many directly driven elements do most Yagi antennas have?

1) None 2) Two 3) Three 4) One

<4>

B-006-011-002
****

8.5/8.10

Approximately how long is the driven element of a Yagi antenna for 14.0 MHz?

1. 5.21 metres (17 feet)
2. 10.67 metres (35 feet)
3. 20.12 metres (66 feet)
4. 10.21 metres (33 feet 6 inches)

<4>

Don't forget that the driven element for a Yagi is most commonly a half-wave dipole

B-006-011-003
****

8.5/8.10

Approximately how long is the director element of a Yagi antenna for 21.1 MHz?

1) 5.18 metres (17 feet)
2) 6.4 metres (21 feet)
3) 3.2 metres (10.5 feet)
4) 12.8 metres (42 feet)

<2>

Don't forget that the driven element for a Yagi is most commonly a half-wave dipole

B-006-011-004
****

8.5/8.10

Approximately how long is the reflector element of a Yagi antenna for 28.1 MHz?

1. 4.88 metres (16 feet)
2. 5.33 metres (17.5 feet)
3. 10.67 metres (35 feet)
4. 2.66 metres (8.75 feet)

<2>

Don't forget that the driven element for a Yagi is most commonly a half-wave dipole

5. B-006-011-005

****

8.10

What is one effect of increasing the boom length and adding directors to a Yagi antenna?

1)SWR increases
2)Weight decreases
3)Wind load decreases
4)Gain increases

<4>

B-006-011-006
****

8.10

What are some advantages of a Yagi with wide element spacing?
1. High gain, less critical tuning and wider bandwidth
2. High gain, lower loss and a low SWR
3. High front-to-back ratio and lower input resistance
4. Shorter boom length, lower weight and wind resistance

<1>

B-006-011-007
****

8.10

Why is a Yagi antenna often used for radiocommunications on the 20-metre band?
1. It provides excellent omnidirectional coverage in the horizontal plane
2. It is smaller, less expensive and easier to erect than a dipole or vertical antenna
3. It provides the highest possible angle of radiation for the HF bands
4. It helps reduce interference from other stations off to the side or behind

<4>

B-006-011-008
****

8.10

What does "antenna front-to- back ratio" mean in reference to a Yagi antenna?
1) The relative position of the driven element with respect to the reflectors and directors
2) The power radiated in the major radiation lobe compared to the power radiated in exactly the opposite direction
3) The power radiated in the major radiation lobe compared to the power radiated 90 degrees away from that direction
4) The number of directors versus the number of reflectors

<2>

B-006-011-009
****

8.10

What is a good way to get maximum performance from a Yagi antenna?
1. Optimize the lengths and spacing of the elements
2. Use RG-58 transmission line
3. Use a reactance bridge to measure the antenna performance from each direction around the antenna
4. Avoid using towers higher than 9 metres (30 feet) above the ground

<1>

B-006-011-010
****

8.10

The spacing between the elements on a three-element Yagi antenna, representing the best overall choice, is _____ of a wavelength.
1) 0.15
2) 0.5
3) 0.75
4) 0.2

<4>

B-006-011-011

****

8.10

If the forward gain of a six-element Yagi is about 10 dB, what would the gain of two of these antennas be if they were "stacked"?

1. 7 dB
2. 13 dB
3. 20 dB
4. 10dB

<2>

B-006-012-001

****

8.5

If you made a half-wavelength dipole antenna for 28.550 MHz, how long would it be?

1. 10.5 metres (34.37 ft)
2. 28.55 metres (93.45 ft)
3. 5.08 metres (16.62 ft)
4. 10.16 metres (33.26 ft)

<3>

B-006-012-002

****

8.8

What is one disadvantage of a random wire antenna?

1. It usually produces vertically polarized radiation
2. It must be longer than 1 wavelength
3. You may experience RF feedback in your station
4. You must use an inverted T matching network for multi-band operation

<3>

B-006-012-003

****

8.6

What is the low angle radiation pattern of an ideal half-wavelength dipole HF antenna installed parallel to the earth?

1. It is a figure-eight, perpendicular to the antenna
2. It is a circle (equal radiation in all directions)
3. It is two smaller lobes on one side of the antenna, and one larger lobe on the other side
4. It is a figure-eight, off both ends of the antenna

<1>

B-006-012-004
****

8.8

The impedances in ohms at the feed point of the dipole and folded dipole are, respectively:

1) 73 and 150
2) 73 and 300
3) 52 and 100
4) 52 and 200

<2>

B-006-012-005
****

8.6

A dipole transmitting antenna, installed at an ideal height so that the ends are pointing North/South, radiates:

1. mostly to the South and North
2. mostly to the South
3. equally in all directions
4. mostly to the East and West

<4>

B-006-012-006
****

8.8

How does the bandwidth of a folded dipole antenna compare with that of a simple dipole antenna?

1) It is essentially the same
2) It is less than 50%
3) It is 0.707 times the bandwidth
4) It is greater

<4>

B-006-012-007
****

8.8

What is a disadvantage of using an antenna equipped with traps?

1. It is too sharply directional at lower frequencies
2. It will radiate harmonics
3. It must be neutralized
4. It can only be used for one band

<2>

B-006-012-008
****

8.8

What is an advantage of using a trap antenna?

1) It may be used for multiband operation
2) It has high directivity at the higher frequencies
3) It has high gain
4) It minimizes harmonic radiation

<1>

B-006-012-009 (NEW)

****

8.5/8.8

If you were to cut a half-wave dipole for 3.75 MHz, what would be its approximate length?

1. 38 meters (125 ft.)
2. 32 meters (105 ft.)
3. 45 meters (145 ft.)
4. 75 meters (245 ft.)

<1>

Since it is a half-wave antenna below 30 MHz the formula will be wavelength = 143/freq. = 150/3.75 = 38.1 m, answer #1

B-006-013-001

****

8.10

What is a cubical quad antenna?

1. A center-fed wire 1/2-electrical wavelength long
2. A vertical conductor 1/4- electrical wavelength high, fed at the bottom
3. Two or more parallel four-sided wire loops, each approximately one-electrical wavelength long
4. Four straight, parallel elements in line with each other, each approximately 1/2 - electrical wavelength long

<3>

B-006-013-002

****

8.10

What is a delta loop antenna?

1. A type of cubical quad antenna, except with triangular elements rather than square
2. A large copper ring or wire loop, used in direction finding
3. An antenna system made of three vertical antennas, arranged in a triangular shape
4. An antenna made from several triangular coils of wire on an insulating form

<1>

B-006-013-003 (NEW)

****

8.5/8.10

Approximately how long is each side of a cubical quad antenna driven element for 21.4 MHz?

1. 3.54 metres (11.7 feet)
2. 0.36 metres (1.17 feet)
3. 14.33 metres (47 feet)
4. 143 metres (469 feet)

<1>

Remember that in a cubical quad that the driven element is <u>one wavelength long</u> and so each side will be 1/4 wavelength long. Again, IC forgot that the frequency was below 30 MHz. The correct answer is 3.34 m but give IC the answer they want, #1

B-006-013-004 (NEW)
****

8.5/8.10
Approximately how long is each side of a cubical quad antenna driven element for 14.3 MHz?

1. 21.43 metres (70.3 feet)
2. 5.36 metres (17.6 feet)
3. 53.34 metres (175 feet)
4. 7.13 metres (23.4 feet)

<2>

Remember that in a cubical quad that the driven element is one wavelength long and each side will be 1/4 wavelength long. Again, IC forgot that the frequency was below 30 MHz. The correct answer is 5.0 m but give IC the answer they want, #2

B-006-013-005 (NEW)
****

8.5/8.10

Approximately how long is each leg of a symmetrical delta loop antenna driven element for 28.7 MHz?

1) 2.67 metres (8.75 feet)
2) 7.13 metres (23.4 feet)
3) 10.67 metres (35 feet)
4) 3.5 metres (11.5 feet)

<4>
Remember that in the delta loop, like the cubical quad, the driven element is one full wavelength long. Each "leg" or side will then be 1/3 wavelength long.

B-006-013-006 (NEW)
****

8.10
Which statement about two-element delta loops and quad antennas is true?

1)They perform very well only at HF
2)They compare favourably with a three-element Yagi
3)They are effective only when constructed using insulated wire
4)They perform poorly above HF
<2>

B-006-013-007
****

8.10
Compared to a dipole antenna, what are the directional radiation characteristics of a cubical quad antenna?

1) |The quad has more directivity in both horizontal and vertical planes
2) The quad has more directivity in the horizontal plane but less directivity in the vertical plane
3) The quad has less directivity in the horizontal plane but more directivity in the vertical plane
4) The quad has less directivity in both horizontal and vertical planes

<1>

B-006-013-008
****

8.10

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?

1. It will change the antenna polarization from vertical to horizontal
2. It will significantly decrease the antenna feed point impedance
3. It will change the antenna polarization from horizontal to vertical
4. It will significantly increase the antenna feed point impedance

<3>

B-006-013-009
****

8.10

What does the term "antenna front-to back ratio" mean in reference to a delta loop antenna?

1) The relative position of the driven element with respect to the reflectors and directors
2) The power radiated in the major radiation lobe compared to the power radiated in exactly the opposite direction
3) The power radiated in the major radiation lobe compared to the power radiated 90 degrees away from that direction
4) The number of directors versus the number of reflectors

<2>

B-006-013-010
****

8.10

The cubical "quad" or "quad" antenna consists of two or more square loops of wire. The driven element has an approximate overall length of:

1) three-quarters of a wavelength
2) one wavelength
3) two wavelengths
4) one-half wavelength

<2>

B-006-013-011
****

8.10

The delta loop antenna consists of two or more triangular structures mounted on a boom. The overall length of the driven element is approximately:

1) one-quarter of a wavelength
2) one wavelength
3) two wavelengths
4) one-half of a wavelength

<2>

B-007-001-001

****

6.10

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

1) Tunnel propagation
2) Sky-wave propagation
3) Auroral propagation
4) Line-of-sight propagation

<4>

B-007-001-002

****

6.4

How does the range of sky-wave propagation compare to ground-wave propagation?

1) It is much shorter
2) It is about the same
3) It depends on the weather
4) It is much longer

<4>

B-007-001-003

****

6.3

When a signal is returned to earth by the ionosphere, what is this called?

1) Tropospheric propagation
2) Ground-wave propagation
3) Sky-wave propagation
4) Earth-moon-earth propagation

<3>

B-007-001-004

****

6.2

How are VHF signals propagated within the range of the visible horizon?

1)By direct wave
2)By sky wave
3)By plane wave
4)By geometric wave

<1>

B-007-001-005

****

6.2

Skywave is another name for:

1) ionospheric wave
2) tropospheric wave
3) ground wave
4) inverted wave

<1>

B-007-001-006
****

6.2
That portion of the radiation which is directly affected by the surface of the earth is called:

1) tropospheric wave
2) ionospheric wave
3) inverted wave
4) ground wave

<4>

B-007-001-007 (NEW)
****

6.2
At lower HF frequencies, radio communication out to 200 km is made possible by:

1) troposphere
2) skip wave
3) ionosphere
4) ground wave

<4>

B-007-001-008
****

6.4
The distance travelled by ground waves:

1. depends on the maximum usable frequency
2. is more at higher frequencies
3. is less at higher frequencies
4. is the same for all frequencies

<3>

B-007-001-009
****

6.2
The radio wave which follows a path from the transmitter to the ionosphere and back to earth is known correctly as the:

1) F layer
2) surface wave
3) ionospheric wave
4) skip wave

<3>

B-007-001-010
****

6.3
Reception of high frequency (HF) radio waves beyond 4000 km is generally possible by:

1) ground wave
2) ionospheric wave
3) skip wave
4) surface wave

<2>

B-007-002-001
****

6.3

What causes the ionosphere to form?

1) Lightning ionizing the outer atmosphere
2) Solar radiation ionizing the outer atmosphere
3) Release of fluorocarbons into the atmosphere
4) Temperature changes ionizing the outer atmosphere

<2>

B-007-002-002
****

6.3

What type of solar radiation is most responsible for ionization in the outer atmosphere?

1) Microwave
2) Ionized particle
3) Ultraviolet
4) Thermal

<3>

B-007-002-003
****

6.3

Which ionospheric region is closest to the earth?

1) The E region
2) The D region
3) The F region
4) The A region

<2>

B-007-002-004
****

6.3

Which region of the ionosphere is the least useful for long distance radio-wave propagation?

1) The F region
2) The F region
3) The D region
4) TheE A region

<3>

B-007-002-005
****

6.3

What two sub-regions of ionosphere exist only in the daytime?

1) Troposphere and stratosphere
2) Electrostatic and electromagnetic
3) D and E
4) F1 and F2

<4>

B-007-002-006 (NEW)

****

6.3

When is the ionosphere most ionized?

1) Dawn
2) Midnight
3) Dusk
4) Midday

<4>

B-007-002-007

****

6.3

When is the ionosphere least ionized?

1) Shortly before dawn
2) Just after noon
3) Just after dusk
4) Shortly before midnight

<1>

B-007-002-008

****

6.3

Why is the F2 region mainly responsible for the longest distance radio-wave propagation?

1. Because it exists only at night
2. Because it is the lowest ionospheric region
3. Because it does not absorb radio waves as much as other ionospheric regions
4. Because it is the highest ionospheric region

<4>

B-007-002-009

****

6.9

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?

1. Because of auroral propagation
2. Because of D-region absorption
3. Because of magnetic flux
4. Because of a lack of activity

<2>

B-007-002-010
****

6.3

During the day, one of the ionospheric layers splits into two parts called:

1. D1 and D2
2. E1 and E2
3. A and B
4. F1 and F2

<4>

B-007-002-011
****

6.3

The position of the E layer in the ionosphere is:
1. below the D layer
2. below the F layer
3. sporadic
4. above the F layer
<2>

B-007-003-001
****

6.3

What is a skip zone?
1. An area which is too far away for ground-wave or sky-wave propagation
2. An area covered by sky-wave propagation
3. An area which is too far away for ground-wave propagation, but too close for sky-wave propagation
4. An area covered by ground- wave propagation
<3>

B-007-003-002 (NEW)
****

6.3

What is the maximum distance along the earth's surface that is normally covered in one hop using the F2 region?
1. None; the F2 region does not support radio-wave propagation
2. 2000 km (1250 miles)
3. 4000 km (2500 miles)
4. 300 km (190 miles)
<3>

Actually this value can be as high as 4800 km! But remember the answer IC wants.

B-007-003-003
****

6.2/6.3

What is the maximum distance along the earth's surface that is normally covered in one hop using the E region?

1) 2000 km (1250 miles)
2) 300 km (190 miles)
3) 4000 km (2500 miles)
4) None; the E region does not support radio-wave propagation

<1>

B-007-003-004
****

6.3

Skip zone is:

1. a zone of silence caused by lost skywaves
2. a zone between any two refracted waves
3. a zone between the end of the ground wave and the point where the first refracted wave returns to earth
4. 3) a zone between the antenna and the return of the first refracted wave

<3>

B-007-003-005
****

6.3

The distance to Europe from your location is approximately 5000 km. What sort of propagation is the most likely to be involved?

1) sporadic "E"
2) back scatter
3) multihop
4) tropospheric scatter

<3>

B-007-003-006
****

6.3

For radio signals, the skip distance is determined by the:

1. power fed to the final
2. angle of radiation
3. type of transmitting antenna used
4. height of the ionosphere and the angle of radiation

<4>

B-007-003-007
****

6.3

The distance from the transmitter to the nearest point where the sky wave returns to the earth is called the:

1. skip zone
2. angle of radiation
3. skip distance
4. maximum usable frequency

<3>

B-007-003-008
****

6.3

Skip distance is the:

1. the minimum distance reached by a signal after one reflection by the ionosphere
2. the maximum distance reached by a signal after one reflection by the ionosphere
3. the minimum distance reached by a ground-wave signal
4. the maximum distance a signal will travel by both a ground wave and reflected wave

<1>

B-007-003-009
****

6.3

Skip distance is a term associated with signals from the ionosphere. Skip effects are due to:

1) reflection and refraction from the ionosphere
2) selective fading of local signals
3) high gain antennas being used
4) local cloud cover

<1>

B-007-003-010
****

6.3

The skip distance of a sky wave will be greatest when the:

1) polarization is vertical
2) ionosphere is most densely ionized
3) angle between ground and radiation is smallest
4) signal given out is strongest

<3>

B-007-003-011
****

6.3

If the height of the reflecting layer of the ionosphere increases, the skip distance of a high frequency (HF) transmission:

1) stays the same
2) varies regularly
3) becomes greater
4) decreases

<3>

B-007-004-001
****

6.3

What effect does the D region of the ionosphere have on lower frequency HF signals in the daytime?

1. It absorbs the signals
2. It bends the radio waves out into space
3. It refracts the radio waves back to earth
4. It has little or no effect on 80-metre radio waves

<1>

B-007-004-002 (NEW)

****

6.3

What causes distant AM broadcast and 160 metre ham band stations not be heard during daytime hours?

1) The presence of ionized clouds in the E region
2) The ionization of the D region
3) The splitting of the F region
4) The weather below the ionosphere

<2>

B-007-004-003

****

6.4

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:

1) fading
2) baffling
3) absorption
4) skip

<1>

B-007-004-004

****

6.4

A change or variation in signal strength at the antenna, caused by differences in path lengths, is called:

1) absorption
2) fluctuation
3) path loss
4) fading

<4>

B-007-004-005

****

6.4

When a transmitted radio signal reaches a station by a one-hop and two-hop skip path, small changes in the ionosphere can cause:

1. consistent fading of received signal
2. consistently stronger signals
3. variations in signal strength
4. a change in the ground-wave signal

<3>

B-007-004-006

****

6.6

The usual effect of ionospheric storms is to:

1) produce extreme weather changes
2) cause a fade-out of sky-wave signals
3) prevent communications by ground wave
4) increase the maximum usable frequency

<2>

B-007-004-007
****

6.3

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?

1) The ionosphere can change the polarization of the signal from moment to moment
2) The ground wave and the sky wave continually shift the polarization
3) Anomalies in the earth's magnetic field produce a profound effect on HF polarization
4) Greater selectivity is possible with HF receivers making changes in polarization redundant

<1>

B-007-004-008
****

6.4

What causes selective fading?

1) Phase differences between radio wave components of the same transmission, as experienced at the receiving station
2) Small changes in beam heading at the receiving station
3) Time differences between the receiving and transmitting stations
4) Large changes in the height of the ionosphere at the receiving station ordinarily occurring shortly before sunrise and sunset

<1>

B-007-004-009
****

6.4

How does the bandwidth of a transmitted signal affect selective fading?

1) It is the same for both wide and narrow bandwidths
2) It is more pronounced at wide bandwidths
3) Only the receiver bandwidth determines the selective fading effect
4) It is more pronounced at narrow bandwidths

<2>

B-007-004-010
****

6.3

Polarization change often takes place on radio waves that are propagated over long distances. Which of these does not cause polarization change?

1) Parabolic interaction
2) Reflections
3) Passage through magnetic fields (Faraday rotation)
4) Refractions

<1>

B-007-004-011

****

6.3

Reflection of a SSB transmission from the ionosphere causes:

1. little or no phase-shift distortion
2. phase-shift distortion
3. signal cancellation at the receiver
4. a high-pitch squeal at the receiver

<1>

B-007-005-001

****

6.6

How do sunspots change the ionization of the atmosphere?

1) The more sunspots there are, the greater the ionization
2) The more sunspots there are, the less the ionization
3) Unless there are sunspots, the ionization is zero
4) They have no effect

<1>

B-007-005-002

****

6.6

How long is an average sunspot cycle?

1. 17 years
2. 5 years
3. 11 years
4. 3) 7 years

<3>

B-007-005-003

****

6.6

What is solar flux?

1) A measure of the tilt of the earth's ionosphere on the side toward the sun
2) The number of sunspots on the side of the sun facing the earth
3) The radio energy emitted by the sun
4) The density of the sun's magnetic field

<3>

B-007-005-004

****

6.6

What is the solar-flux index?

1. Another name for the American sunspot number
2. A measure of solar activity that compares daily readings with results from the last six months
3. A measure of solar activity that is taken at a specific frequency
4. A measure of solar activity that is taken annually

<3>

B-007-005-005

****

6.6

What influences all radiocommunication beyond ground-wave or line-of-sight ranges?

1) The F2 region of the ionosphere
2) The F1 region of the ionosphere
3) Solar activity
4) Lunar tidal effects

<3>

B-007-005-006

****

6.6

Which two types of radiation from the sun influence propagation?

1) Sub-audible and audio-frequency emissions
2) Polar region and equatorial emissions
3) Infra-red and gamma-ray emissions
4) Electromagnetic and particle emissions

<4>

B-007-005-007

****

6.6

When sunspot numbers are high, how is the ionosphere affected?

1. Frequencies up to 40 MHz or higher are normally usable for long-distance communication
2. High frequency radio signals are absorbed
3. Frequencies up to 100 MHz or higher are normally usable for long-distance communication
4. High frequency radio signals become weak and distorted

<1>

B-007-005-008

****

6.6

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

1) ionosphere
2) aurora borealis
3) atmospheric conditions
4) sun

<4>

B-007-005-009
****

6.6
Average duration of a solar cycle is:
1. 11 years
2. 3 years
3. 6 years
4. 1 year
<1>

B-007-005-010
****

6.6
The ability of the ionosphere to reflect high frequency radio signals depends on:
1. the amount of solar radiation
2. the power of the transmitted signal
3. the receiver sensitivity
4. upper atmosphere weather conditions
<1>

B-007-005-011
****

6.6
HF radio propagation cycles have a period of approximately 11:
1) years
2) months
3) days
4) centuries
<1>

B-007-006-001
****

6.8
What happens to signals higher in frequency than the critical frequency?
1. They pass through the ionosphere
2. They are absorbed by the ionosphere
3. Their frequency is changed by the ionosphere to be below the maximum usable frequency
4. They are reflected back to their source
<1>

B-007-006-002
****

6.8
What causes the maximum usable frequency to vary?
1) The amount of radiation received from the sun, mainly ultraviolet
2) The temperature of the ionosphere
3) The speed of the winds in the upper atmosphere
4) The type of weather just below the ionosphere
<1>

B-007-006-003

****

6.8

What does maximum usable frequency mean?

1) The lowest frequency signal that will reach its intended destination
2) The highest frequency signal that is most absorbed by the ionosphere
3) The lowest frequency signal that is most absorbed by the ionosphere
4) The highest frequency signal that will reach its intended destination

<4>

B-007-006-004

****

6.8

What can be done at an amateur station to continue HF communications during a sudden ionospheric disturbance?

1) Try a higher frequency band
2) Try the other sideband
3) Try a different antenna polarization
4) Try a different frequency shift

<1>

B-007-006-005

****

6.9

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?

1) Listen for signals on the 10-metre beacon frequency
2) Listen for signals on the 20-metre beacon frequency
3) Listen for signals on the 39-metre broadcast frequency
4) Listen for WWVH time signals on 20 MHz

<1>

B-007-006-006

****

6.8

What usually happens to radio waves with frequencies below the maximum usable frequency (MUF) when they are sent into the ionosphere?

1) They are changed to a frequency above the MUF
2) They are completely absorbed by the ionosphere
3) They are bent back to the earth
4) They pass through the ionosphere

<3>

B-007-006-007

****

6.9

At what point in the solar cycle does the 20-metre band usually support worldwide propagation during daylight hours?

1) Only at the minimum point of the solar cycle
2) Only at the maximum point of the solar cycle
3) At any point in the solar cycle
4) At the summer solstice

<3>

B-007-006-008
****

6.8

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:

1) skip distance
2) maximum usable frequency
3) speed of light
4) sunspot frequency

<2>

B-007-006-009
****

6.9

Communication on the 80 metre band is generally most difficult during:

1. daytime in summer
2. evening in winter
3. evening in summer
4. daytime in winter

<1>

B-007-006-010
****

6.8

The optimum working frequency provides the best long range HF communication. Compared with the maximum usable frequency (MUF), it is usually:

1. double the MUF
2. half the MUF
3. slightly lower
4. slightly higher

<3>

B-007-006-011
****

6.9

During summer daytime, which bands are the most difficult for communications beyond ground wave?

1)160 and 80 metres

2) 40 metres

3) 30 metres

4) 20 metres

<1>

B-007-007-001
****

6.11

Which ionospheric region most affects sky-wave propagation on the 6 metre band?

1) The F2 region
2) The F 1 region
3) The E region
4) The D region

<3>

B-007-007-002
****

6.10

What effect does tropospheric bending have on 2-metre radio waves?

1) It causes them to travel shorter distances
2) It garbles the signal
3) It reverses the sideband of the signal
4) It lets you contact stations farther away

<4>

B-007-007-003
****

6.10

What causes tropospheric ducting of radio waves?

1) Lightning between the transmitting and receiving stations
2) An aurora to the north
3) A temperature inversion
4) A very low pressure area

<3>

B-007-007-004
****

6.10

That portion of the radiation kept close to the earth's surface due to bending in the atmosphere is called the:

1) inverted wave
2) ground wave
3) tropospheric wave
4) ionospheric wave

<3>

B-007-007-005
****

6.10

What is a sporadic-E condition?

1. Patches of dense ionization at E-region height
2. Partial tropospheric ducting at E-region height
3. Variations in E-region height caused by sunspot variations
4. A brief decrease in VHF signals caused by sunspot variations

<1>

B-007-007-006

****

6.10

On which amateur frequency band is the extended-distance propagation effect of sporadic-E most often observed?

1) 160 metres
2) 20 metres
3) 6 metres
4) 2 metres

<3>

B-007-007-007

****

6.10

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

1. East
2. North
3. West
4. South

<2>

B-007-007-008

****

6.10

Where in the ionosphere does auroral activity occur?

1) At F-region height
2) At E-region height
3) In the equatorial band
4) At D-region height

(2)

B-007-007-009

****

6.10

Which emission modes are best for auroral propagation?

1) RTTY and AM
2) FM and CW
3) CW and SSB
4) SSB and FM

<3>

B-007-007-010

****

6.11

Excluding enhanced propagation modes, what is the approximate range of normal VHF tropospheric propagation?

1. 2400 km (1500 miles)
2. 800 km (500 miles)
3. 3200 km (2000 miles)
4. 1600 km (1000 miles)

<2>

B-007-007-011

****

6.11

What effect is responsible for propagating a VHF signal over 800 km (500 miles)?

1) Faraday rotation
2) Tropospheric ducting
3) D-region absorption
4) Moon bounce

(2)

B-007-008-001 (NEW)

****

6.3

What kind of unusual HF allows weak signals from the skip zone to be heard occasionally?

1) Scatter-mode
2) Sky-wave
3) Ducting
4) Ground-wave

<1>

B-007-008-002

****

6.5

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

1) Ground-wave
2) Line-of-sight
3) Scatter
4) Ducting

<3>

B-007-008-003 (NEW)
****

6.5
What is a characteristic of HF scatter signals?
1) Reversed modulation
2) Rapid flutter or hollow sounding distortion
3) Reversed sidebands
4) High intelligibility
<2>

B-007-008-004
****

6.5
What makes HF scatter signals often sound distorted?
1) Energy scattered into the skip zone through several radio-wave paths
2) Auroral activity and changes in the earth's magnetic field
3) Propagation through ground waves that absorb much of the signal
4) The state of the E-region at the point of refraction
<1>

B-007-008-005
****

6.5
Why are HF scatter signals usually weak?
1) Propagation through ground waves absorbs most of the signal energy
2) Only a small part of the signal energy is scattered into the skip zone
3) The F region of the ionosphere absorbs most of the signal energy
4) Auroral activity absorbs most of the signal energy
<2>

B-007-008-006 (NEW)
****

6.5
What type of radio-wave propagation allows a signal to be detected at a distance too far for ground-wave propagation but too near for normal sky-wave propagation?
1. Short-path skip
2. Sporadic-E
3. Scatter
4. Ground wave
<3>

B-007-008-007 (NEW)

****

6.5,, 6.8

On the HF bands when is scatter propagation most likely involved?

1. When the sunspot cycle is at a minimum and D-region absorption is high
2. At night
3. When the F1 and F2 regions are combined
4. When weak and distorted signals near or above the maximum usable frequency (MUF) can be heard over unusual paths

<4>

B-007-008-008

****

6.5, 6.10

Which of the following IS NOT a scatter mode?

1) Meteor scatter
2) Tropospheric scatter
3) Ionospheric scatter
4) Absorption scatter

<4>

B-007-008-009

********** B-

6.10

Meteor scatter is most effective on what band?

1. 40 metres
2. 6 metres
3. 15 metres
4. 160 metres

<2>

B-007-008-010

****

6.5

Which of the following IS NOT a scatter mode?

1. Side scatter
2. Back scatter
3. Inverted scatter
4. Forward scatter

<3>

B-007-008-011

****

6.10

In which frequency range is meteor scatter most effective for extended-range communication?

1) 30 - 100 MHz
2) 10 - 30 MHz
3) 3 - 10 MHz
4) 100 - 300 MHz

<1>

B-008-001-001
****

15.3
What is meant by receiver overload?
1) Interference caused by turning the volume up too high
2) Too much current from the power supply
3) Interference caused by strong signals from a nearby transmitter
4) Too much voltage from the power supply
<3>

B-008-001-002
****

15.3
What is one way to tell if radio frequency interference to a receiver is caused by front-end overload?
1. If grounding the receiver makes the problem worse
2. If connecting a low pass filter to the receiver greatly cuts down the interference
3. If the interference is about the same no matter what frequency is used for the transmitter
4. If connecting a low pass filter to the transmitter greatly cuts down the interference
<3>

B-008-001-003
****

15.3
If a neighbour reports television interference whenever you transmit, no matter what band you use, what is probably the cause of the interference?
1) Incorrect antenna length
2) Receiver VR tube discharge
3) Receiver overload
4) Too little transmitter harmonic suppression
<3>

B-008-001-004
****

15.3
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?

1)High-pass
2)Low-pass
3)Band-pass
4) No filter
<1>

B-008-001-005 (NEW)

****

15.3

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?

15.1, 15.3

1) Improper station grounding
2) Harmonic radiation
3) Receiver desensitization
4) Both stations are fed from the same generator

<3>

Also called receiver overload.

B-008-001-006 (NEW)

****

15.3

Inter-modulation of a broadcast receiver by a nearby transmitter would be noticed in the receiver as:

1) interference only when a broadcast signal is tuned
2) the undesired signal in the background of the desired signal
3) distortion on transmitted voice peaks
4) interference continuously across the dial

<2>

B-008-001-007 (NEW)

****

15.1, 15.3

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 modulation?

1. Audio stage intermodulation interference
2. Receiver intermodulation interference
3. Harmonic interference from other stations
4. Audio stage overload interference

<2>

B-008-001-008 (NEW)

****

15.1, 15.3, 14.2

Two or more strong out-of-band signals mix in your receiver to produce interference on a desired frequency. What is this called?

1) Receiver quieting
2) Front-end desensitization
3) Capture effect
4) Intermodulation interference

<4>

B-008-001-009 (NEW)

****

15.3/14.2

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?

1. The strong signal of one mobile may desensitize the receiver of the other mobile receiver
2. Simplex operation does not require CTCSS tones
3. There is less time delay using simplex operation as compared to a repeater
4. There are more simplex frequencies than repeater frequencies

<1>

B-008-001-010 (NEW)

****

B-008-001-010

15.3

A television receiver suffers interference on channel 6 (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?

1) Insert a low pass filter at the antenna connector of the HF transmitter
2) Insert a high pass at the antenna connector of the HF transmitter
3) Insert a low pass filter at the antenna connector of the television set
4) Insert a high pass filter at the antenna connector of the of the television

<4>

In *Bloom's Taxonomy of Educational Objectives* this would be described as a “synthesis and evaluation question”. You know how to answer it but you have to bring different concepts into play to answer the question but without being told how to do this. The challenge here to keep any signals out of the TV set in the range 76 – 82 MHz. One possible source of interference is a harmonic of 14 MHz. Five times 14 MHz is 70 MHz and six times 14 MHz is 84 MHz. The two harmonics are above/below channel 2. Add to this that you are a good operator and your transceiver is equipped with a Low-Pass filter so your transmitter can be ruled out as the primary source. So the culprit here is probably the FM station. One possibility is that its 94.5 MHz signal mixes with your 14 MHz signal. There will be two products, a sum of the two signals (92.5 + 14=106.5 MHz)and a difference between the two signals (92.5 – 14 = 78.5 MHz). The latter falls right in the middle of Channel 6. The solution is #4, the High-Pass Filter attached to the antenna connector of the of the television.

B-008-001-011 (NEW)

****

15.3

How can intermodulation be reduced?

1) By installing a suitable filter at the receiver
2) By using a better antenna
3) By increasing the receiver RF gain while decreasing the AF gain
4) By adjusting the passband tuning

<1>

The assumption here is that you are dealing with interference in a receiver.

B-008-002-001 (NEW)
****

15.3; Fig. 15-2
What devices would you install to reduce or eliminate audio-frequency interference to home entertainment systems?
1) Bypass resistors
2) Metal-oxide varistors
3) Coils on ferrite cores
4) Bypass inductors
<3>

B-008-002-002
****

15.3
What should be done if a properly operating amateur station is the cause of interference to a nearby telephone?
1) Ground and shield the local telephone distribution amplifier
2) Stop transmitting whenever the telephone is in use
3) Ask the telephone company to install RFI filters
4) Make internal adjustments to the telephone equipment
<3>

B-008-002-003
****

15.3
What sound is heard from a public-address system if audio rectification of a nearby single-sideband phone transmission occurs?
1. Clearly audible speech from the transmitter's signals
2. On-and-off humming or clicking
3. Distorted speech from the transmitter's signals
4. A steady hum whenever the transmitter's carrier is on the air
<3>

B-008-002-004
****

15.3
What sound is heard from a public-address system if audio rectification of a nearby CW transmission occurs?
1) Audible, possibly distorted speech Muffled,
2) severely distorted speech
3) A steady whistling
4) On-and-off humming or clicking
<4>

B-008-002-005
****

15.2

How can you minimize the possibility of audio rectification of your transmitter's signals?

1) By installing bypass capacitors on all power supply rectifiers
2) By using CW emission only
3) By ensuring that all station equipment is properly grounded
4) By using a solid-state transmitter

<3>

B-008-002-006
****

``

15.3

An amateur transmitter is being heard across the entire dial of a broadcast receiver. The receiver is most probably suffering from:

1) harmonics interference from the transmitter
2) cross-modulation or audio rectification in the receiver
3) poor image rejection
4) splatter from the transmitter

<2>

B-008-002-007
****

15.3

Cross-modulation is usually caused by:

1. rectification of strong signals
2. harmonics generated at the transmitter
3. improper filtering in the transmitter
4. lack of receiver sensitivity and selectivity

<1>

B-008-002-008
****

15.3; Fig. 15-2

What device can be used to minimize the effect of RF pickup by audio wires connected to stereo speakers, intercom amplifiers, telephones, etc.?

1) Magnet
2) Attenuator
3) Diode
4) Ferrite core

<4>

B-008-002-009

****

15.3

Stereo speaker leads often act as antennas to pick up RF signals. What is one method you can use to minimize this effect?

1) Shorten the leads
2) Lengthen the leads
3) Connect the speaker through an audio attenuator
4) Connect a diode across the speaker

<1>

B-008-002-010

****

15.3; Fig. 15-2

One method of preventing RF from entering a stereo set through the speaker leads is to wrap each of the speaker leads around a:

1. copper bar
2. iron bar
3. ferrite core
4. wooden dowel

<3>

B-008-002-011

****

15.3

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

1) transmitting antennas
2) RF attenuators
3) frequency discriminators
4) receiving antennas

(4)

B-008-003-001

****

15.7

How can you prevent key-clicks?

1. By increasing power
2. By using a key-click filter
3. By using a better power supply
4. By sending CW more slowly
5. <2>

B-008-003-002

****

15.7

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

1. Your hand-held may be transmitting spurious emissions
2. You may need a power amplifier for your hand-held
3. Your hand-held may have chirp from weak batteries
4. You may need to turn the volume up on your hand-held

<1>

B-008-003-003

****

15.3

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

1. Side tones
2. Transmitter chirping
3. Spurious emissions
4. Off-frequency emissions

<3>

B-008-003-004

****

15.3

What problem may occur if your transmitter is operated without the cover and other shielding in place?

1) It may transmit a weak signal
2) It may transmit spurious emissions
3) It may interfere with other stations operating near its frequency
4) It may transmit a chirpy signal

<2>

B-008-003-005

****

15.7

In Morse code transmission, local RF interference (key-clicks) is produced by:

1) the making and breaking of the circuit at the Morse key
2) frequency shifting caused by poor voltage regulation
3) the power amplifier, and is caused by high frequency parasitics
4) poor waveshaping caused by a poor voltage regulator

<1>

B-008-003-006

****

15.7

Key-clicks, heard from a Morse code transmitter at a distant receiver, are the result of:

1. power supply hum modulating the carrier
2. too sharp rise and decay times of the carrier
3. sparks emitting RF from the key
4. contacts changes in oscillator frequency on keying

<2>

B-008-003-007

****

15.7

In a Morse code transmission, broad bandwidth RF interference (key-clicks) heard at a distance is produced by:

1) shift in frequency when keying the transmitter
2) sparking at the key contacts
3) sudden movement in the receiver loudspeaker
4) poor shaping of the waveform

<4>

B-008-003-008 (NEW)

****

15.7; Fig. 15-5

Key-clicks can be suppressed by:

1. inserting a choke and a capacitor at the key
2. turning the receiver down
3. regulating the oscillator supply voltage
4. using a choke in the RF power output

<1>

B-008-003-009

****

15.3

A parasitic oscillation:

1. is generated by parasitic elements of a Yagi beam
2. does not cause any radio interference
3. is produced in a transmitter oscillator stage
4. is an unwanted signal developed in a transmitter

<4>

B-008-003-010

****

15.3

Parasitic oscillations in the RF power amplifier stage of a transmitter may be found:

1) at high or low frequencies
2) on harmonic frequencies
3) at high frequencies only
4) at low frequencies only

<1>

B-008-003-011

****

15.3

Transmitter RF amplifiers can generate parasitic oscillations:

1) on VHF frequencies only
2) on the transmitter fundamental frequency
3) on either side of the transmitter frequency
4) on harmonics of the transmitter frequency

<3>

B-008-004-001

****

15.3

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?

1. De-ionization of the ionosphere near your neighbour's TV antenna
2. Harmonic radiation from your transmitter
3. TV receiver front-end overload
4. Too much low pass filtering on the transmitter

<2>

See B-008-004-007

B-008-004-002

****

15.3

What is meant by harmonic radiation?

1. Unwanted signals at frequencies which are multiples of the fundamental (chosen) frequency
2. Unwanted signals that are combined with a 60-Hz hum
3. Unwanted signals caused by sympathetic vibrations from a nearby transmitter
4. Signals which cause skip propagation to occur

<1>

B-008-004-003
****

15.1

Why is harmonic radiation from an amateur station not wanted?

1. It uses large amounts of electric power
2. It may cause sympathetic vibrations in nearby transmitters
3. It may cause auroras in the air
4. It may cause interference to other stations and may result in out-of-band signals

<4>

B-008-004-004
****

15.1

What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?

1. Parasitic excitation
2. Harmonic radiation
3. Intermodulation
4. Auroral distortion

<2>

B-008-004-005
****

15.1

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?

1) Your transmitter's power-supply filter choke was bad
2) You were sending CW too fast
3) Your transmitter was radiating harmonic signals
4) Your transmitter's power-supply filter capacitor was bad

<3>

See B-008-004-007

B-008-004-006
****

13.4

What causes splatter interference?

1) Keying a transmitter too fast
2) Signals from a transmitter's output circuit are being sent back to its input circuit
3) The transmitting antenna is the wrong length
4) Overmodulation of a transmitter

<4>

B-008-004-007
****

15.1

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:

1) no high-pass filter on the TV
2) a bad ground at the transmitter
3) harmonic radiation from the transmitter front-end
4) overload of the TV

<3>

The 15 m band is 21.00 – 21.450 MHz. Channel 3 is 60 – 66 MHz. For the sake of argument let us assume that you are transmitting CW on 21.050 MHz. If your transmitter is generating harmonics the third harmonic of 21.050 MHz is 63.150 MHz, right in the middle of Channel 3.

B-008-004-008
****

15.3, 11.8

One possible cause of TV interference by harmonics from an SSB transmitter is from "flat topping" - driving the final amplifier into non-linear operation. The most appropriate remedy for this is:

1)re-tune transmitter output
2)use another antenna
3)reduce microphone gain
4)reduce oscillator output

<3>

B-008-004-009
****

15.3

In a transmitter, excessive harmonics are produced by:

1. low SWR
2. resonant circuits
3. a linear amplifier
4. overdriven stages

<4>

B-008-004-010

****

15.3

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:

1) crystal oscillator operating on its fundamental
2) seventh harmonic of an 80 metre transmission
3) second harmonic of a 10 metre transmission
4) third harmonic of a 15 metre transmission

<3>

The 10 m band is 28.00 – 29.70 MHz. The interfering signal is found to have a frequency of 57 MHz. If the offending station is transmitting on 28.5 MHz and also generating harmonics, the second harmonic is 57 MHz.

B-008-004-011

****

15.3

Harmonics may be produced in the RF power amplifier of a transmitter if:

1)excessive drive signal is applied to it the output tank circuit
2)is not correctly tuned
3)the oscillator frequency is unstable modulation
4)is applied to more than one stage

<1>

B-008-005-001

********** B-

15.3

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

1. A low pass filter
2. A key-click filter
3. A high pass filter
4. A CW filter

<1>

B-008-005-002

****

15.3

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

1) To reduce fundamental radiation
2) To reduce low frequency interference to other amateurs
3) To reduce harmonic radiation
4) To reduce RF energy below a cut-off point

<3>

B-008-005-003

****

15.3

What circuit blocks RF energy above and below a certain limit?

1. A high pass filter
2. An input filter
3. A low pass filter
4. A band pass filter

<4>

B-008-005-004

****

15.3

What should be the impedance of a low pass filter as compared to the impedance of the transmission line into which it is inserted?

1) Substantially lower
2) Twice the transmission line impedance
3) About the same
4) Substantially higher

<3>

B-008-005-005

****

15.3

In order to reduce the harmonic output of a high frequency (HF) transmitter, which of the following filters should be installed at the transmitter?

1) Band pass 2) High pass 3) Rejection 4) Low pass

<4>

B-008-005-006

****

15.3

To reduce harmonic output from a transmitter, you would put a _____ in the transmission line as close to the transmitter as possible.

1) high pass filter
2) low pass filter
3) band reject filter
4) wave trap

<2>

B-008-005-007

****

15.3

To reduce energy from an HF transmitter getting into a television set, you would place a_____ as close to the TV as possible.

1)low pass filter
2)wave trap
3)band reject filter
4)high pass filter

<4>

B-008-005-008

****

15.3

A band pass filter will:

1) attenuate high frequencies but not low
2) pass frequencies each side of a band
3) allow only certain frequencies through
4) stop frequencies in a certain band

<3>

B-008-005-009

****

15.3

A band reject filter will:

1) allow only two frequencies through
2) pass frequencies each side of a band
3) pass frequencies below 100 MHz
4) stop frequencies each side of a band

<2>

B-008-005-010

****

15.3

A high pass filter would normally be fitted:

1)between microphone and speech amplifier
2) at the Morse key or keying relay in a transmitter
3) at the antenna terminals of the TV receiver
4) between transmitter output and transmission line

<3>

15.3

A low pass filter suitable for a high frequency transmitter (HF) would:

1. Pass audio frequencies below 3 kHz
2. Attenuate frequencies above 30 MHz
3. Pass audio frequencies above 3 kHz
4. Attenuate frequencies below 30 MHz

<2>

Remember that the HF band is 3 – 30 MHz.