

Basic Qualification Question Bank for Amateur Radio Operator Certificate Examinations

Station Assembly, Practice & Safety



B-003-01-01 (1)

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

- as close as possible to the transceiver output
- as close as possible to the antenna tuner output
- as close as possible to the antenna midway between the transceiver and antenna

B-003-01-02 (4)

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

- as close as possible to the antenna
- as close as possible to the antenna tuner output
- as close as possible to the linear amplifier input
- as close as possible to the linear amplifier output

B-003-01-03 (2)

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

- Dummy load
- Low pass filter
- Antenna switch
- SWR bridge

B-003-01-04 (1)

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

SWR bridge
Antenna switch
Linear amplifier
Dummy load

B-003-01-05 (3)

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

Transceiver
Low pass filter
Antenna switch
SWR Bridge

B-003-01-06 (1)

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

Antenna tuner
Antenna switch
Dummy load
SWR bridge

B-003-01-07 (4)

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

SWR bridge
Low pass filter
Antenna tuner
Dummy load

B-003-01-08 (1)

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

most antennas when operating below 14 MHz
most antennas when operating above 14 MHz
mono-band Yagi type antennas
tri-band Yagi antennas

B-003-01-09 (4)

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

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

B-003-02-01 (1)

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

microphone
modulator
power amplifier
frequency multiplier

B-003-02-02 (3)

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

modulator
power amplifier
speech amplifier
oscillator

B-003-02-03 (1)

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

modulator
power amplifier
microphone
frequency multiplier

B-003-02-04 (2)

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

speech amplifier
oscillator
power amplifier
microphone

B-003-02-05 (1)

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

frequency multiplier
microphone
speech amplifier
modulator

B-003-02-06 (2)

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

modulator
power amplifier
speech amplifier
oscillator

B-003-02-07 (3)

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

frequency multiplier
microphone
antenna
modulator

B-003-03-01 (3)

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

mixer
frequency discriminator
antenna
limiter

B-003-03-02 (4)

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

audio frequency amplifier
high frequency oscillator
intermediate frequency amplifier
radio frequency amplifier

B-003-03-03 (4)

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

radio frequency amplifier
limiter
antenna
mixer

B-003-03-04 (4)

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

frequency discriminator
intermediate frequency amplifier
speaker and/or headphones
high frequency oscillator

B-003-03-05 (1)

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

- filter
- limiter
- frequency discriminator
- radio frequency amplifier

B-003-03-06 (2)

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

- high frequency oscillator
- intermediate frequency amplifier
- mixer
- radio frequency amplifier

B-003-03-07 (3)

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

- filter
- high frequency oscillator
- limiter
- radio frequency amplifier

B-003-03-08 (4)

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

- intermediate frequency amplifier
- speaker and/or headphones
- high frequency oscillator
- frequency discriminator

B-003-03-09 (4)

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

- limiter
- intermediate frequency amplifier
- radio frequency amplifier
- audio frequency amplifier

B-003-03-10 (3)

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

intermediate frequency amplifier
frequency discriminator
speaker and/or headphones
limiter

B-003-04-01 (3)

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

power amplifier
telegraph key
master oscillator
power supply

B-003-04-02 (2)

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

driver/buffer
power supply
power amplifier
master oscillator

B-003-04-03 (2)

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

audio amplifier
driver/buffer
power supply
telegraph key

B-003-04-04 (3)

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

master oscillator
driver/buffer
telegraph key
power amplifier

B-003-04-05 (2)

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

power supply
power amplifier
telegraph key
master oscillator

B-003-04-06 (1)

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

power amplifier
driver/buffer
power supply
master oscillator

B-003-05-01 (4)

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

product detector
high frequency oscillator
intermediate frequency amplifier
radio frequency amplifier

B-003-05-02 (4)

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

filter
intermediate frequency amplifier
audio frequency amplifier
radio frequency amplifier

B-003-05-03 (3)

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

beat frequency oscillator
product detector
mixer
filter

B-003-05-04 (2)

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

intermediate frequency amplifier
high frequency oscillator
beat frequency oscillator
product detector

B-003-05-05 (1)

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

filter
radio frequency amplifier
beat frequency oscillator
product detector

B-003-05-06 (1)

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

intermediate frequency amplifier
audio frequency amplifier
beat frequency oscillator
radio frequency amplifier

B-003-05-07 (1)

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

product detector
high frequency oscillator
beat frequency oscillator
intermediate frequency amplifier

B-003-05-08 (2)

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

mixer

beat frequency oscillator
radio frequency amplifier
audio frequency amplifier

B-003-05-09 (2)

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

intermediate frequency amplifier
audio frequency amplifier
high frequency oscillator
radio frequency amplifier

B-003-05-10 (1)

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

speaker and/or headphones
mixer
radio frequency amplifier
beat frequency oscillator

B-003-06-01 (1)

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

radio frequency oscillator
variable frequency oscillator
linear amplifier
mixer

B-003-06-02 (2)

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

microphone
balanced modulator
mixer
radio frequency oscillator

B-003-06-03 (3)

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

radio frequency oscillator
speech amplifier
filter
microphone

B-003-06-04 (4)

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

radio frequency oscillator
filter
mixer
microphone

B-003-06-05 (3)

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

filter
variable frequency oscillator
speech amplifier
linear amplifier

B-003-06-06 (4)

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

antenna
balanced modulator
linear amplifier
mixer

B-003-06-07 (1)

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

variable frequency oscillator
radio frequency oscillator
linear amplifier
antenna

B-003-06-08 (2)

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

variable frequency oscillator
linear amplifier
balanced modulator
radio frequency oscillator

B-003-06-09 (1)

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

antenna
filter
variable frequency oscillator
speech amplifier

B-003-07-01 (4)

In a digital system, the _____ is controlled by the computer.

antenna
power supply
transceiver
input/output

B-003-07-02 (2)

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

amplifier
computer
antenna
input/output

B-003-07-03 (1)

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

modem
computer
scanner
input/output

B-003-07-04 (2)

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

input/output
transceiver
scanner
antenna

B-003-08-01 (2)

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

regulator
input
filter
rectifier

B-003-08-02 (1)

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

transformer
output
regulator
filter

B-003-08-03 (1)

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

rectifier
input
output
regulator

B-003-08-04 (1)

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

filter
output
transformer
regulator

B-003-08-05 (1)

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

regulator
transformer
rectifier
output

B-003-08-06 (1)

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

output
rectifier
input
transformer

B-003-10-01 (3)

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

CW, SSB voice, RTTY, FM voice
CW, FM voice, RTTY, SSB voice
CW, RTTY, SSB voice, FM voice
RTTY, CW, SSB voice, FM voice

B-003-10-02 (1)

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

signal plus noise to noise ratio
audio output in watts
bandwidth of the IF in kilohertz
number of RF amplifiers

B-003-10-03 (3)

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

a steady oscillator drift
more than one signal
less signal or more noise
more signal or less noise

B-003-10-04 (4)

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

Double sideband full carrier
Frequency modulation
Pulse modulation
Single sideband suppressed carrier

B-003-10-05 (3)

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

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

B-003-10-06 (3)

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?

- 7.435 MHz
- 3.995 MHz
- 455 kHz
- 3.54 MHz

B-003-10-07 (1)

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

- A notch filter
- A band pass filter
- An all pass filter
- A pi-network filter

B-003-10-08 (4)

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

- selectivity, stability and frequency range
- sensitivity, stability and crossmodulation
- sensitivity, selectivity and image rejection
- sensitivity, selectivity and stability

B-003-10-09 (2)

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?

- 250 Hz
- 2.4 kHz
- 6 kHz
- 500 Hz

B-003-10-10 (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?

- 500 Hz
- 2.4 kHz
- 6 kHz
- 250 Hz

B-003-10-11 (3)

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?

- 2100 - 2300 Hz
- 300 - 2700 Hz
- 750 - 850 Hz
- 100 - 1100 Hz

B-003-11-01 (2)

What does chirp mean?

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

B-003-11-02 (2)

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

- Add a key-click filter
- Keep the power supply voltages very steady
- Keep the power supply current very steady

B-003-11-03 (2)

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

- A crystal-controlled transmitter
- A VFO-controlled transmitter
- A single-sideband transmitter
- A packet-radio transmitter

B-003-11-04 (2)

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

- Phase modulation
- Amplitude modulation
- Amplitude-rectification modulation
- Frequency modulation

B-003-11-05 (3)

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

Frequency modulation
Pulse modulation
Amplitude modulation
Frequency shift keying

B-003-11-06 (3)

Morse code is usually transmitted by radio as:

a series of key-clicks
a continuous carrier
an interrupted carrier
a voice-modulated carrier

B-003-11-07 (3)

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

loss of modulation in the transmitted signal
the driver stage will not deliver power to the final
excessive heat produced in the final transmitter stage
the output tank circuit breaks down

B-003-11-08 (3)

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

smaller DC current drain
lower modulation percentage
reduced antenna radiation
radiated key-clicks

B-003-11-09 (3)

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

become over modulated
generate key-clicks
drift in frequency
cause undue distortion

B-003-11-10 (1)

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?

- It has been dissipated as heat loss
- It has been used to provide greater efficiency
- It has been used to provide negative feedback
- It has been used to provide positive feedback

B-003-11-11 (2)

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

- is lost in the feed line
- appears as heat dissipation
- is due to oscillating
- radiates from the antenna

B-003-12-01 (3)

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

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

B-003-12-02 (4)

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

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

B-003-12-03 (2)

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?

- Peak output power
- Peak envelope power
- Average radio-frequency power
- Peak transmitter power

B-003-12-04 (4)

What is the usual bandwidth of a singlesideband amateur signal?

- 1 kHz
- 2 kHz
- Between 3 and 6 kHz
- Between 2 and 3 kHz

B-003-12-05 (2)

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

IF amplifier
Filter
RF amplifier
Carrier oscillator

B-003-12-06 (1)

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

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

B-003-12-07 (4)

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

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

B-003-12-08 (1)

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

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

B-003-12-09 (4)

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

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

B-003-12-10 (2)

In a SSB transmission, the carrier is:

transmitted with one sideband
reinserted at the receiver
inserted at the transmitter
of no use at the receiver

B-003-12-11 (2)

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

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

B-003-13-01 (4)

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

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

B-003-13-02 (1)

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

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

B-003-13-03 (4)

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

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

B-003-13-04 (3)

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

A frequency-modulated carrier
An amplitude-modulated carrier
An unmodulated carrier
A phase-modulated carrier

B-003-13-05 (1)

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

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

B-003-13-06 (1)

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

Between 10 and 20 kHz
Less than 5 kHz
Between 5 and 10 kHz
Greater than 20 kHz

B-003-13-07 (1)

What is the result of overdeviation in an FM transmitter?

Out-of-channel emissions
Increased transmitter power
Increased transmitter range
Poor carrier suppression

B-003-13-08 (4)

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

Multiplex modulation
Amplitude modulation
Pulse modulation
Phase modulation

B-003-13-09 (4)

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

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

B-003-13-10 (1)

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?

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

B-003-13-11 (4)

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:

- attach effect
- interference effect
- surrender effect
- capture effect

B-003-14-01 (1)

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

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

B-003-14-02 (1)

Where would you connect a microphone for voice operation?

- To a transceiver
- To a power supply
- To an antenna switch
- To an antenna

B-003-14-03 (3)

What would you connect to a transceiver for voice operation?

- A receiver audio filter
- A terminal-voice controller
- A microphone
- A splatter filter

B-003-14-04 (3)

Why might a dummy antenna get warm when in use?

- Because it absorbs static electricity
- Because it stores radio waves
- Because it changes RF energy into heat
- Because it stores electric current

B-003-14-05 (4)

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

- VXO
- VCO
- VFO
- VOX

B-003-14-06 (1)

What is the reason for using a properly adjusted speech processor with a singlesideband phone transmitter?

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

B-003-14-07 (1)

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

- It will add nothing to the output PEP
- It will increase the output PEP
- It will decrease the peak power output
- It will decrease the average power output

B-003-14-08 (1)

When switching from receive to transmit:

- the receiver should be muted
- the transmit oscillator should be turned off
- the receiving antenna should be connected
- the power supply should be off

B-003-14-09 (2)

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

- ground the antenna on receive
- disable the unit not being used
- switch between meters
- disconnect the antenna tuner

B-003-14-10 (1)

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

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

B-003-14-11 (3)

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

crystal earpiece
resistor
loudspeaker
capacitor

B-003-15-01 (4)

What does "connected" mean in a packet-radio link?

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

B-003-15-02 (2)

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

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

B-003-15-03 (3)

What is a digipeater?

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

B-003-15-04 (1)

What does "network" mean in packet radio?

A way of connecting packet-radio stations so data can be sent over long distances

A way of connecting terminal-node controllers by telephone so data can be sent over long distances

The connections on terminal-node controllers

The programming in a terminal-node controller that rejects other callers if a station is already connected

B-003-15-05 (4)

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

A transceiver and a modem

A DTMF keypad, a monitor and a transceiver

A DTMF microphone, a monitor and a transceiver

A transceiver and a terminal or computer system

B-003-15-06 (1)

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

Connect a terminal-node controller to the transceiver's microphone input

Connect a terminal-node controller to interrupt the transceiver's carrier wave

Connect a keyboard to the transceiver's microphone input

Connect a DTMF key pad to the transceiver's microphone input

B-003-15-07 (3)

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

Approximately 6 kHz

Approximately 3 kHz

250 to 500 Hz

60 Hz

B-003-15-08 (3)

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

packet and AMTOR

baudot and ASCII

mark and space

dot and dash

B-003-15-09 (2)

Which of the following terms does not apply to packet?

ASCII

Baudot

Terminal-Node Controller (TNC)

AX.25

B-003-15-10 (3)

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

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

B-003-15-11 (4)

What is the most common data rate used for VHF packet communications?

300 baud
9600 baud
2400 baud
1200 baud

B-003-16-01 (3)

How much voltage does a standard automobile battery usually supply ?

About 240 volts
About 120 volts
About 12 volts
About 9 volts

B-003-16-02 (4)

Which component has a positive and a negative side?

A potentiometer
A fuse
A resistor
A battery

B-003-16-03 (3)

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

low leakage cell
memory cell
storage cell
primary cell

B-003-16-04 (2)

Which of the following is a source of EMF?

germanium diode
lead acid battery
P channel FET
carbon resistor

B-003-16-05 (2)

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

has two terminals
can be repeatedly recharged
can be completely discharged
contains an electrolyte

B-003-16-06 (2)

A dry 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:

electrolyte becoming dry
internal resistance
current capacity
voltage capacity

B-003-16-07 (1)

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

never
twice
many times
once

B-003-16-08 (4)

All storage batteries have discharge limits, and nickel-cadmium, the type most used in hand-held portables, should not be discharged to less than:

0.5 volt per cell
1.5 volt per cell
0.2 volt per cell
1.0 volt per cell

B-003-16-09 (1)

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

parallel
series
parallel resonant
series resonant

B-003-16-10 (4)

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

parallel
series-parallel
resonance
series

B-003-16-11 (1)

A nickel-cadmium battery should never be:

short-circuited
recharged
left disconnected
left overnight at room temperature

B-003-17-01 (1)

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

The power supply
The speaker
The microphone
The SWR meter

B-003-17-02 (2)

What device converts household current to 12 VDC?

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

B-003-17-03 (3)

Which of these usually needs a heavyduty power supply?

An antenna switch
A receiver
A transceiver
An SWR meter

B-003-17-04 (1)

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

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

B-003-17-05 (4)

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

- 17 watts
- 2.4 watts
- 6 watts
- 60 watts

B-003-17-06 (2)

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

- has a high resistance to AC but not to DC
- allows electrons to flow in only one direction from cathode to anode
- has a high resistance to DC but not to AC
- allows electrons to flow in only one direction from anode to cathode

B-003-17-07 (3)

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

- transformer
- capacitor
- diode
- resistor

B-003-17-08 (1)

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

- 120 and 240 volts
- 110 and 220 volts
- 100 and 200 volts
- 130 and 260 volts

B-003-17-09 (4)

So-called "transformerless" power supplies are used in some applications (notably tube-type radios and TV receivers). When working on such equipment, one should be very careful because:

- DC circuits are negative relative to the chassis
- chassis connections are grounded by the centre pin of the power source's plug
- the load across the power supply is variable
- one side of the line cord is connected to the chassis

B-003-17-10 (2)

If household voltages are consistently high or low at your location, this can be corrected by the use of:

- a full-wave bridge rectifier
- an autotransformer
- a variable voltmeter
- a proper load resistance

B-003-17-11 (1)

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

- the power supply
- the variable-frequency oscillator
- the driver circuit
- the power amplifier circuit

B-003-18-01 (1)

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

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

B-003-18-02 (3)

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

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

B-003-18-03 (4)

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

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

B-003-18-04 (1)

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

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

B-003-18-05 (4)

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

- Approximately 10 amperes
- More than 20 amperes
- Current flow through the human body is never fatal
- As little as 1/10 of an ampere

B-003-18-06 (1)

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

- The heart
- The brain
- The liver
- The lungs

B-003-18-07 (4)

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

- 100 volts
- 1000 volts
- 2000 volts
- 30 volts

B-003-18-08 (3)

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

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

B-003-18-09 (1)

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

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

B-003-18-10 (1)

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

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

B-003-18-11 (1)

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

- electric shock
- damaging the transmitter
- overmodulation
- blowing the fuse

B-003-19-01 (2)

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

- The antenna feed line
- All station equipment
- The AC power line
- The power supply primary

B-003-19-02 (1)

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

- a metallic cold water pipe
- a plastic cold water pipe
- a window screen
- a metallic natural gas pipe

B-003-19-03 (1)

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

- a good ground connection
- a dummy load
- insulated shock mounts
- the antenna

B-003-19-04 (4)

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

- Hard plastic
- Iron or steel
- Fiberglass
- Copper-clad steel

B-003-19-06 (3)

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

- To the white wire
- To the "hot" side of the power switch
- To the chassis
- To the fuse

B-003-19-07 (3)

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?

Because of a bad antenna connection, allowing the RF energy to take an easier path out of the transceiver through you

Because the transceiver's heat-sensing circuit is not working to start the cooling fan

Because the ground wire is a resonant length on several HF bands and acts more like an antenna than an RF ground connection

Because the ground rod is not making good contact with moist earth

B-003-19-08 (3)

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

Make a couple of loops in the ground wire where it connects to your station

Drive the ground rod at least 420 cm (14 feet) into the ground

Keep the station's ground wire as short as possible

Use a beryllium ground wire for best conductivity

B-003-19-09 (3)

Which statement about station grounding is true?

A ground loop is an effective way to ground station equipment

If the chassis of all station equipment is connected with a good conductor, there is no need to tie them to an earth ground

RF hot spots can occur in a station located above the ground floor if the equipment is grounded by a long ground wire

The chassis of each piece of station equipment should be tied together with high-impedance conductors

B-003-19-10 (4)

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:

does not become conductive to prevent electric shock

becomes conductive to prevent electric shock

develops a high voltage compared to the ground

does not develop a high voltage with respect to the ground

B-003-19-11 (2)

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

prevent the plug from being reversed in the wall outlet

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

prevent short circuits

make it inconvenient to use

B-003-20-01 (2)

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

- To lock the antenna system in one position
- To protect the station and building from lightning damage
- To avoid radio frequency interference
- To make sure everything will stay in place

B-003-20-02 (4)

How can an antenna system be protected from lightning damage?

- Install a balun at the antenna feed point
- Install an RF choke in the antenna feed line
- Install a fuse in the antenna feed line
- Ground all antennas when they are not in use

B-003-20-03 (1)

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

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

B-003-20-04 (2)

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

- A reflective vest of approved color
- Approved equipment in accordance with provincial safety standards concerning climbing
- A flashing red, yellow or white light
- A grounding chain

B-003-20-05 (3)

Why should you wear a safety belt if you are working on an antenna tower?

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

B-003-20-06 (3)

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

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

B-003-20-07 (4)

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

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

B-003-20-08 (3)

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

Touching the antenna might reflect the signal back to the transmitter and cause damage
Touching the antenna might radiate harmonics
Touching the antenna might cause RF burns
Touching the antenna might cause television interference

B-003-20-09 (2)

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

Because contact might break the feed line
Because high-voltage radio energy might burn the person
Because contact might cause spurious emissions
Because contact might cause a short circuit and damage the transmitter

B-003-20-10 (1)

What safety precautions should you take before beginning repairs on an antenna?

Be sure to turn off the transmitter and disconnect the feed line
Be sure you and the antenna structure are grounded
Inform your neighbors so they are aware of your intentions
Turn off the main power switch in your house

B-003-20-11 (3)

What precaution should you take when installing a ground-mounted antenna?

It should be painted so people or animals do not accidentally run into it
It should not be installed in a wet area
It should be installed so no one can come in contact with it
It should not be installed higher than you can reach

B-003-21-01 (1)

What should you do for safety when operating at 1270 MHz?

Keep antenna away from your eyes when RF is applied
Make sure that an RF leakage filter is installed at the antenna feed point
Make sure the standing wave ratio is low before you conduct a test
Never use a horizontally polarized antenna

B-003-21-02 (2)

What should you do for safety if you put up a UHF transmitting antenna?

Make sure the antenna is near the ground to keep its RF energy pointing in the correct direction
Make sure the antenna will be in a place where no one can get near it when you are transmitting
Make sure you connect an RF leakage filter at the antenna feed point
Make sure that RF field screens are in place

B-003-21-03 (3)

What should you do for safety, before removing the shielding on a UHF power amplifier?

Make sure that RF leakage filters are connected
Make sure the antenna feed line is properly grounded
Make sure the amplifier cannot accidentally be turned on
Make sure all RF screens are in place at the antenna feed line

B-003-21-04 (2)

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

To use your body to reflect the signal in one direction
To reduce your exposure to the radiofrequency energy
To keep static charges from building up
To help the antenna radiate energy equally in all directions

B-003-21-05 (4)

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

Pointed towards the station you are contacting
Pointed away from the station you are contacting
Pointed down to bounce the signal off the ground
Away from your head and away from others

B-003-21-06 (4)

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

It causes radiation poisoning
It paralyzes the tissue
It produces genetic changes in the tissue
It heats the tissue

B-003-21-07 (2)

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

Heart
Eyes
Liver
Hands

B-003-21-08 (4)

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?

It causes radiation poisoning
It causes blood flow to stop
It produces genetic changes in the tissue
It heats the tissue

B-003-21-09 (3)

If you operate your amateur station with indoor antennas, what precautions should you take when you install them?

Position the antennas parallel to electrical power wires to take advantage of parasitic effects
Position the antennas along the edge of a wall where it meets the floor or ceiling to reduce parasitic radiation
Locate the antennas as far away as possible from living spaces that will be occupied while you are operating
Locate the antennas close to your operating position to minimize feed-line length

B-003-21-10 (1)

Why should directional high-gain antennas be mounted higher than nearby structures?

So they will not direct RF energy toward people in nearby structures
So they will be dried by the wind after a heavy rain storm
So they will not damage nearby structures with RF energy
So they will receive more sky waves and fewer ground waves

B-003-21-11 (1)

For best RF safety, where should the ends and center of a dipole antenna be located?

As high as possible to prevent people from coming in contact with the antenna
Near or over moist ground so RF energy will be radiated away from the ground
As close to the transmitter as possible so RF energy will be concentrated near the transmitter
Close to the ground so simple adjustments can be easily made without climbing a ladder