



Amateur Radio Operator Certificate Examination

Basic Qualification

2024-05-01

To pass this exam, you must correctly answer 70 out of 100 questions

Exam Number: 972934

1. (B-002-006-006)

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

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

2. (B-007-003-010)

The skip distance of a sky wave will be greatest when the:

- A. angle between the ground and the radiation is smallest
- B. polarization is vertical
- C. signal given out is strongest
- D. ionosphere is most densely ionized

3. (B-006-004-008)

In what values are RF transmission line losses expressed?

- A. Ohms per metre
- B. dB per MHz
- C. Ohms per MHz
- D. dB per unit length

4. (B-005-002-011)

The most common material used to make a resistor is:

- A. lead
- B. carbon
- C. mica
- D. gold

5. (B-001-010-003)

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

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

6. (B-005-005-007)

Which series combination of resistors would replace a single 120 ohm resistor?

- A. Six 22 ohm
- B. Two 62 ohm
- C. Five 100 ohm
- D. Five 24 ohm

7. (B-006-002-004)

What does the term "balun" mean?

- A. Balanced unmodulator
- B. Balanced to unbalanced
- C. Balanced unloader
- D. Balanced antenna network

8. (B-001-008-006)

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

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

9. (B-001-009-004)

Who may be the control operator of an amateur station?

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

10. (B-002-004-007)

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

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

11. (B-002-005-008)

What is the meaning of the term "73"?

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

12. (B-003-013-006)

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

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

13. (B-001-017-009)

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

- A. 250
- B. 100
- C. 1000
- D. 750

14. (B-006-006-007)

To obtain efficient power transmission from a transmitter to an antenna requires:

- A. low load resistance
- B. inductive impedance
- C. matching of impedances
- D. high load impedance

15. (B-003-001-002)

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

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

16. (B-001-005-004)

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

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

17. (B-001-004-001)

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

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

18. (B-006-007-002)

What does vertical wave polarization mean?

- A. The magnetic lines of force of a radio wave are perpendicular to the Earth's surface
- B. The electric and magnetic lines of force of a radio wave are parallel to the Earth's surface
- C. The electric lines of force of a radio wave are parallel to the Earth's surface
- D. The electric lines of force of a radio wave are perpendicular to the Earth's surface

19. (B-003-007-002)

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

- A. antenna
- B. input/output
- C. computer
- D. amplifier

20. (B-001-021-003)

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

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

21. (B-008-002-001)

What devices would you install to reduce or eliminate audio-frequency interference to home entertainment systems?

- A. Bypass resistors
- B. Metal-oxide varistors
- C. Bypass inductors
- D. Coils on ferrite cores

22. (B-003-016-007)

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

- A. many times
- B. twice
- C. never
- D. once

23. (B-001-014-004)

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

- A. until he has properly identified his station
- B. unless he is passing third-party traffic
- C. without written permission from Innovation, Science and Economic Development Canada
- D. when that country has notified the International Telecommunication Union that it objects to such communications

24. (B-003-010-001)

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

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

25. (B-007-001-003)

When a signal is returned to Earth by the ionosphere, what is this called?

- A. Sky-wave propagation
- B. Tropospheric propagation
- C. Ground-wave propagation
- D. Earth-Moon-Earth propagation

26. (B-001-025-003)

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

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

27. (B-005-011-007)

The voltage induced in a conductor moving in a magnetic field is at a maximum when the movement is:

- A. made in a counter clockwise direction
- B. parallel to the lines of force
- C. perpendicular to the lines of force
- D. made in a clockwise direction

28. (B-003-002-003)

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

- A. power amplifier
- B. modulator
- C. microphone
- D. frequency multiplier

29. (B-003-015-005)

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

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

30. (B-005-008-005)

If a signal-strength report is "20 dB over S9", what should the report be if the transmitter power is reduced from 1500 watts to 150 watts?

- A. S9 plus 3 dB
- B. S9
- C. S9 plus 10 dB
- D. S9 plus 5 dB

31. (B-001-007-009)

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

- A. must be approved by Innovation, Science and Economic Development Canada
- B. is permitted for third-party traffic
- C. is permitted for contests
- D. is not permitted

32. (B-005-007-002)

Approximately what frequency range can most humans hear?

- A. 200 - 200 000 Hz
- B. 20 000 - 30 000 Hz
- C. 20 - 20 000 Hz
- D. 0 - 20 Hz

33. (B-001-020-002)

The operator of an amateur station shall ensure that:

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

34. (B-002-008-010)

In order of priority, a distress message comes before:

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

35. (B-003-021-009)

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

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

36. (B-007-008-002)

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

- A. Scatter
- B. Line-of-sight
- C. Ducting
- D. Ground-wave

37. (B-001-018-001)

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

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

38. (B-008-005-003)

What circuit blocks RF energy above and below a certain limit?

- A. A low pass filter
- B. An input filter
- C. A high pass filter
- D. A band pass filter

39. (B-006-005-010)

A resonant antenna having a feed point impedance of 200 ohms is connected to a transmission line which has an impedance of 50 ohms. What will the standing wave ratio of this system be?

- A. 6:1
- B. 3:1
- C. 4:1
- D. 5:1

40. (B-005-012-004)

A tuned circuit is formed from two basic components. These are:

- A. directors and reflectors
- B. resistors and transistors
- C. inductors and capacitors
- D. diodes and transistors

41. (B-004-005-002)

Which component can amplify a small signal but must use high voltages?

- A. A transistor
- B. An electrolytic capacitor
- C. A multiple-cell battery
- D. A vacuum tube

42. (B-006-013-009)

What does the term "antenna front-to-back ratio" mean in reference to a delta loop antenna?

- A. The power radiated in the major radiation lobe compared to the power radiated in exactly the opposite direction
- B. The power radiated in the major radiation lobe compared to the power radiated 90 degrees away from that direction
- C. The number of directors versus the number of reflectors
- D. The relative position of the driven element with respect to the reflectors and directors

43. (B-003-011-007)

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

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

44. (B-001-023-008)

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

- A. be postponed until those in dispute reach an agreement
- B. be made by the municipality in which the antenna is to be built
- C. be made by Innovation, Science and Economic Development Canada
- D. be made by a majority vote of those residing within a radius of three times the antenna structure height

45. (B-001-019-006)

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

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

46. (B-006-003-009)

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

- A. Coaxial cable
- B. 300 ohm twin-lead
- C. 75 ohm twin-lead
- D. 600 ohm open wire line

47. (B-003-019-003)

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

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

48. (B-001-022-001)

Which of these statements is not correct?

- A. An accredited volunteer examiner must hold an Amateur Radio Operator Certificate with Basic, Advanced, and Morse code qualifications
- B. An accredited examiner may recover the cost of administering an examination
- C. The fee for taking an examination for an Amateur Radio Operator Certificate at an Innovation, Science and Economic Development Canada office is \$5 per qualification
- D. There are no fees for taking an examination for an Amateur Radio Operator Certificate at an Innovation, Science and Economic Development Canada office.

49. (B-004-001-010)

Amplifiers can amplify:

- A. voltage, current, or power
- B. voltage, power, or inductance
- C. voltage, current, or inductance
- D. current, power, or inductance

50. (B-002-002-007)

What is the Standard International Phonetic for the letter G?

- A. Germany
- B. George
- C. Gibraltar
- D. Golf

51. (B-002-003-007)

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

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

52. (B-003-017-010)

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

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

53. (B-001-015-001)

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

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

54. (B-005-006-004)

When two 500 ohm 1 watt resistors are connected in series, the maximum total power that can be dissipated by the resistors is:

- A. 4 watts
- B. 2 watts
- C. 1 watt
- D. 1/2 watt

55. (B-007-002-006)

When is the ionosphere most ionized?

- A. Dawn
- B. Dusk
- C. Midday
- D. Midnight

56. (B-007-005-011)

HF radio propagation cycles have a period of approximately 11:

- A. days
- B. centuries
- C. months
- D. years

57. (B-003-006-005)

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

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

58. (B-003-014-011)

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

- A. Capacitor
- B. Resistor
- C. Loudspeaker
- D. Crystal earpiece

59. (B-005-009-001)

If two equal-value inductors are connected in series, what is their total inductance?

- A. The value of one inductor times the value of the other
- B. Half the value of one inductor
- C. Twice the value of one inductor
- D. The same as the value of either inductor

60. (B-007-004-007)

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

- A. The ionosphere can change the polarization of the signal from moment to moment
- B. Anomalies in the Earth's magnetic field produce a profound effect on HF polarization but not on VHF & UHF frequencies
- C. The ground wave and the sky wave continually shift the polarization
- D. Greater selectivity is possible with HF receivers making changes in polarization redundant

61. (B-006-011-009)

What is a good way to get maximum performance from a Yagi antenna?

- A. Optimize the lengths and spacing of the elements
- B. Avoid using towers higher than 9 metres (30 feet) above the ground
- C. Use a reactance bridge to measure the antenna performance from each direction around the antenna
- D. Use RG-58 transmission line

62. (B-008-001-006)

Inter-modulation in a broadcast receiver by a nearby transmitter would be noticed in the receiver as:

- A. interference continuously across the dial
- B. the undesired signal in the background of the desired signal
- C. interference only when a broadcast signal is tuned
- D. distortion on transmitted voice peaks

63. (B-003-012-004)

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

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

64. (B-003-009-003)

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

- A. driven element
- B. director
- C. reflector
- D. boom

65. (B-001-012-001)

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

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

66. (B-008-004-002)

What is meant by harmonic radiation?

- A. Unwanted signals caused by sympathetic vibrations from a nearby transmitter
- B. Signals which cause skip propagation to occur
- C. Unwanted signals that are combined with a 60-Hz hum
- D. Unwanted signals at frequencies which are multiples of the fundamental (chosen) frequency

67. (B-005-004-002)

How is the current in a DC circuit calculated when the voltage and resistance are known?

- A. Current equals voltage divided by resistance
- B. Current equals resistance multiplied by voltage
- C. Current equals power divided by voltage
- D. Current equals resistance divided by voltage

68. (B-001-002-006)

The fee for an Amateur Radio Operator Certificate is:

- A. \$32
- B. free
- C. \$24
- D. \$10

69. (B-002-007-006)

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

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

70. (B-007-007-004)

That portion of the radiation kept close to the Earth's surface due to bending in the atmosphere is called the:

- A. inverted wave
- B. tropospheric wave
- C. ground wave
- D. ionospheric wave

71. (B-006-009-008)

What is meant by antenna bandwidth?

- A. Antenna length divided by the number of elements
- B. The angle formed between two imaginary lines drawn through the ends of the elements
- C. The angle between the half-power radiation points
- D. The frequency range over which the antenna may be expected to perform well

72. (B-003-005-007)

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

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

73. (B-006-010-002)

If you made a quarter-wavelength vertical antenna for 21.125 MHz, approximately how long would it be?

- A. 3.6 metres (11.8 ft)
- B. 3.36 metres (11.0 ft)
- C. 6.76 metres (22.2 ft)
- D. 7.2 metres (23.6 ft)

74. (B-005-001-008)

A current of one quarter ampere may be written as:

- A. 0.25 milliampere
- B. 0.5 amperes
- C. 250 microamperes
- D. 250 milliamperes

75. (B-003-003-005)

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

- A. limiter
- B. radio frequency amplifier
- C. filter
- D. frequency discriminator

76. (B-001-013-005)

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

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

77. (B-007-006-008)

If we transmit a signal, the frequency of which is so high we no longer receive a reflection from the ionosphere, the signal frequency is above the:

- A. maximum usable frequency
- B. sunspot frequency
- C. skip distance
- D. speed of light

78. (B-004-003-003)

The three leads from a PNP transistor are named:

- A. gate, source and drain
- B. collector, source and drain
- C. drain, base and source
- D. collector, emitter and base

79. (B-003-018-007)

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

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

80. (B-005-010-002)

How does a capacitor react to AC?

- A. As the amplitude of the applied AC increases, the reactance decreases
- B. As the frequency of the applied AC increases, the reactance decreases
- C. As the frequency of the applied AC increases, the reactance increases
- D. As the amplitude of the applied AC increases, the reactance increases

81. (B-003-004-006)

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

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

82. (B-001-024-005)

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

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

83. (B-005-013-005)

Which of the following meters would you use to measure the power supply current drawn by a small hand-held transistorized receiver?

- A. An RF power meter
- B. An electrostatic voltmeter
- C. A DC ammeter
- D. An RF ammeter

84. (B-001-016-002)

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

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

85. (B-003-020-005)

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

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

86. (B-006-001-001)

What connects your transceiver to your antenna?

- A. A transmission line
- B. A dummy load
- C. The power cord
- D. A ground wire

87. (B-004-004-007)

The control element in the field effect transistor is the:

- A. drain
- B. base
- C. source
- D. gate

88. (B-006-012-008)

What is an advantage of using a trap antenna?

- A. It has high gain
- B. It has high directivity at the higher frequencies
- C. It minimizes harmonic radiation
- D. It may be used for multi-band operation

89. (B-006-008-003)

The wavelength for a frequency of 25 MHz is:

- A. 12 metres (39.4 ft)
- B. 32 metres (105 ft)
- C. 15 metres (49.2 ft)
- D. 4 metres (13.1 ft)

90. (B-002-001-005)

What is a CTCSS tone?

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

91. (B-001-001-002)

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

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

92. (B-001-011-005)

An amateur radio station in distress may:

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

93. (B-001-003-002)

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

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

94. (B-004-002-002)

One important application for diodes is recovering information from transmitted signals. This is referred to as:

- A. biasing
- B. ionization
- C. regeneration
- D. demodulation

95. (B-003-008-001)

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

- A. filter
- B. input
- C. rectifier
- D. regulator

96. (B-008-003-010)

Parasitic oscillations in the RF power amplifier stage of a transmitter may be found:

- A. at high frequencies only
- B. at high or low frequencies
- C. at low frequencies only
- D. on harmonic frequencies

97. (B-001-006-006)

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

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

98. (B-004-006-010)

Which colour band would differentiate a 120-ohm from a 1200-ohm resistor?

- A. Fourth band
- B. First band
- C. Second band
- D. Third band

99. (B-005-003-002)

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

- A. They will all be the same
- B. The 60 watt bulb
- C. The 40 watt bulb
- D. The 100 watt bulb

100. (B-002-009-006)

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

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