B-006-011-001 **(A)**

How many directly driven elements do most Yagi antennas have?

A One
B Two
C Three
D None

B-006-011-002 **(C)**

Approximately how long is the driven element of a Yagi antenna for 14.0 MHz?

A 10.67 metres (35 feet)
B 20.12 metres (66 feet)
C 10.21 metres (33.5 feet)
D 5.21 metres (17 feet)

B-006-011-003 **(B)**

Approximately how long is the director element of a Yagi antenna for 21.1 MHz?

A 12.8 metres (42 feet)
B 6.4 metres (21 feet)
C 5.18 metres (17 feet)
D 3.2 metres (10.5 feet)

B-006-011-004 **(A)**

Approximately how long is the reflector element of a Yagi antenna for 28.1 MHz?

A 5.33 metres (17.5 feet)
B 4.88 metres (16 feet)
C 10.67 metres (35 feet)
D 2.66 metres (8.75 feet)

B-006-011-005 **(A)**

What is one effect of increasing the boom length and adding directors to a Yagi antenna?

A Gain increases
B SWR increases
C Weight decreases
D Wind load decreases

B-006-011-006 **(A)**

What are some advantages of a Yagi with wide element spacing?

A High gain, less critical tuning and wider bandwidth
B High gain, lower loss and a low SWR
C High front-to-back ratio and lower input resistance
D Shorter boom length, lower weight and wind resistance

B-006-011-007 **(D)**

Why is a Yagi antenna often used for radiocommunications on the 20-metre band?

A It provides excellent omnidirectional coverage in the horizontal plane
B It is smaller, less expensive and easier to erect than a dipole or vertical antenna
C It provides the highest possible angle of radiation for the HF bands
D It helps reduce interference from other stations off to the side or behind

B-006-011-008 **(D)**

What does "antenna front-to-back ratio" mean in reference to a Yagi antenna?

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

B-006-011-009 **(C)**

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

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

B-006-011-010 **(B)**

The spacing between the elements on a three-element Yagi antenna, representing the best overall choice, is _____ of a wavelength.

A 0.75
B 0.20
C 0.10
D 0.50

B-006-011-011 **(B)**

If the forward gain of a six-element Yagi is about 10 dBi, what would the gain of two of these antennas be if they were "stacked"?

A 10 dBi
B 13 dBi
C 7 dBi
D 20 dBi

B-006-012-001 **(C)**

If you made a half-wavelength dipole antenna for 28.150 MHz, approximately how long would it be?

A 28.55 metres (93.45 ft)
B 10.16 metres (33.26 ft)
C 5.08 metres (16.62 ft)
D 10.5 metres (34.37 ft)

B-006-012-002 **(A)**

What is one disadvantage of a random wire antenna?

A You may experience RF feedback in your station
B It usually produces vertically polarized radiation
C It must be longer than 1 wavelength
D You must use an inverted T matching network for multi-band operation

B-006-012-003 **(B)**

What is the low angle radiation pattern of an ideal half-wavelength dipole HF antenna in free space installed parallel to the Earth?

A It is a figure-eight, off both ends of the antenna
B It is a figure-eight, perpendicular to the antenna
C It is a circle (equal radiation in all directions)
D It is two smaller lobes on one side of the antenna, and one larger lobe on the other side

B-006-012-004 **(D)**

The impedances in ohms at the feed point of the dipole and folded dipole in free space are, respectively:

A 73 and 150
B 52 and 100
C 52 and 200
D 73 and 300

B-006-012-005 **(A)**

A horizontal dipole transmitting antenna, installed at an ideal height so that the ends are pointing North/South, radiates:

A mostly to the East and West
B mostly to the South and North
C mostly to the South
D equally in all directions

B-006-012-006 **(D)**

How does the bandwidth of a folded dipole antenna compare with that of a simple dipole antenna?

A It is essentially the same
B It is less than 50%
C It is 0.707 times the bandwidth
D It is greater

B-006-012-007 **(D)**

What is a disadvantage of using an antenna equipped with traps?

A It is too sharply directional at lower frequencies
B It must be neutralized
C It can only be used for one band
D It may radiate harmonics more readily

B-006-012-008 **(B)**

What is an advantage of using a trap antenna?

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

B-006-012-009 **(B)**

If you were to cut a half wave dipole for 3.75 MHz, what would be its approximate length?

A 75 meters (245 ft)
B 38 meters (125 ft)
C 32 meters (105 ft)
D 45 meters (145 ft)

B-006-013-001 **(D)**

What is a cubical quad antenna?

A A center-fed wire 1/2-electrical wavelength long
B A vertical conductor 1/4-electrical wavelength high, fed at the bottom
C Four straight, parallel elements in line with each other, each approximately 1/2-electrical wavelength long
D Two or more parallel four-sided wire loops, each approximately one-electrical wavelength long

B-006-013-002 **(C)**

What is a delta loop antenna?

A An antenna system made of three vertical antennas, arranged in a triangular shape
B An antenna made from several triangular coils of wire on an insulating form
C An antenna whose elements are each a three sided loop whose total length is approximately one electrical wavelength
D A large copper ring or wire loop, used in direction finding

B-006-013-003 **(B)**

Approximately how long is each side of a cubical quad antenna driven element for 21.4 MHz?

A 143 metres (469 feet)
B 3.54 metres (11.7 feet)
C 0.36 metres (1.17 feet)
D 14.33 metres (47 feet)

B-006-013-004 **(B)**

Approximately how long is each side of a cubical quad antenna driven element for 14.3 MHz?

A 7.13 metres (23.4 feet)
B 5.36 metres (17.6 feet)
C 21.43 metres (70.3 feet)
D 53.34 metres (175 feet)

B-006-013-005 **(A)**

Approximately how long is each leg of a symmetrical delta loop antenna driven element for 28.7 MHz?

A 3.32 metres (10.89 feet)
B 2.67 metres (8.75 feet)
C 7.13 metres (23.4 feet)
D 10.67 metres (35 feet)

B-006-013-006 **(A)**

Which statement about two-element delta loops and quad antennas is true?

A They compare favourably with a three-element Yagi
B They perform very well only at HF
C They are effective only when constructed using insulated wire
D They perform poorly above HF

B-006-013-007 **(A)**

Compared to a dipole antenna, what are the directional radiation characteristics of a cubical quad antenna?

A The quad has more directivity in both horizontal and vertical planes
B The quad has more directivity in the horizontal plane but less directivity in the vertical plane
C The quad has less directivity in the horizontal plane but more directivity in the vertical plane
D The quad has less directivity in both horizontal and vertical planes

B-006-013-008 **(A)**

Moving the feed point of a multi-element quad antenna from a side parallel to the ground to a side perpendicular to the ground will have what effect?

A It will change the antenna polarization from horizontal to vertical
B It will change the antenna polarization from vertical to horizontal
C It will significantly decrease the antenna feed point impedance
D It will significantly increase the antenna feed point impedance

B-006-013-009 **(A)**

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

B-006-013-010 **(C)**

The cubical "quad" or "quad" antenna consists of two or more square loops of wire. The driven element has an approximate overall length of:

A two wavelengths
B one-half wavelength
C one wavelength
D three-quarters of a wavelength

B-006-013-011 **(A)**

The delta loop antenna consists of two or more triangular structures mounted on a boom. The overall length of the driven element is approximately:

A one wavelength
B one-quarter of a wavelength
C two wavelengths
D one-half of a wavelength

B-007-001-001 **(D)**

What type of propagation usually occurs from one hand-held VHF transceiver to another nearby?

A Tunnel propagation
B Skywave propagation
C Auroral propagation
D Line-of-sight propagation

B-007-001-002 **(A)**

How does the range of sky-wave propagation compare to ground-wave propagation?

A It is much longer
B It is much shorter
C It is about the same
D It depends on the weather

B-007-001-003 **(D)**

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

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

B-007-001-004 **(A)**

How are VHF signals propagated within the range of the visible horizon?

A By direct wave
B By sky wave
C By plane wave
D By geometric wave

B-007-001-005 **(C)**

Skywave is another name for:

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

B-007-001-006 **(A)**

That portion of the radiation which is directly affected by the surface of the Earth is called:

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

B-007-001-007 **(C)**

At lower HF frequencies, radiocommunication out to 200 km is made possible by:

A skip wave
B ionosphere
C ground wave
D troposphere

B-007-001-008 **(C)**

The distance travelled by ground waves:

A is more at higher frequencies
B is the same for all frequencies
C is less at higher frequencies
D depends on the maximum usable frequency

B-007-001-009 **(B)**

The radio wave which follows a path from the transmitter to the ionosphere and back to Earth is known correctly as the:

A skip wave
B ionospheric wave
C F layer
D surface wave

B-007-001-010 **(A)**

Reception of high frequency (HF) radio waves beyond 4000 km is generally made possible by:

A ionospheric wave
B ground wave
C skip wave
D surface wave

B-007-002-001 **(A)**

What causes the ionosphere to form?

A Solar radiation ionizing the outer atmosphere
B Lightning ionizing the outer atmosphere
C Release of fluorocarbons into the atmosphere
D Temperature changes ionizing the outer atmosphere

B-007-002-002 **(D)**

What type of solar radiation is most responsible for ionization in the outer atmosphere?

A Microwave
B Ionized particles
C Thermal
D Ultraviolet

B-007-002-003 **(B)**

Which ionospheric region is closest to the Earth?

A The A region
B The D region
C The E region
D The F region

B-007-002-004 **(A)**

Which region of the ionosphere is the least useful for long distance radio-wave propagation?

A The D region
B The F2 region
C The F1 region
D The E region

B-007-002-005 **(A)**

What two sub-regions of ionosphere exist only in the daytime?

A F1 and F2
B Troposphere and stratosphere
C Electrostatic and electromagnetic
D D and E

B-007-002-006 **(D)**

When is the ionosphere most ionized?

A Dawn
B Midnight
C Dusk
D Midday

B-007-002-007 **(D)**

When is the ionosphere least ionized?

A Just after noon
B Just after dusk
C Shortly before midnight
D Shortly before dawn

B-007-002-008 **(D)**

Why is the F2 region mainly responsible for the longest distance radio-wave propagation?

A Because it exists only at night
B Because it is the lowest ionospheric region
C Because it does not absorb radio waves as much as other ionospheric regions
D Because it is the highest ionospheric region

B-007-002-009 **(D)**

What is the main reason the 160, 80 and 40 metre amateur bands tend to be useful only for short-distance communications during daylight hours?

A Because of auroral propagation
B Because of magnetic flux
C Because of a lack of activity
D Because of D-region absorption

B-007-002-010 **(D)**

During the day, one of the ionospheric layers splits into two parts called:

A D1 and D2
B E1 and E2
C A and B
D F1 and F2

B-007-002-011 **(C)**

The position of the E layer in the ionosphere is:

A sporadic
B above the F layer
C below the F layer
D below the D layer

B-007-003-001 **(B)**

What is a skip zone?

A An area covered by ground-wave propagation
B An area which is too far away for ground-wave propagation, but too close for sky-wave propagation
C An area which is too far away for ground-wave or sky-wave propagation
D An area covered by sky-wave propagation

B-007-003-002 **(A)**

What is the maximum distance along the Earth's surface that is normally covered in one hop using the F2 region?

A 4000 km (2500 miles)
B None, the F2 region does not support radio-wave propagation
C 2000 km (1250 miles)
D 300 km (190 miles)

B-007-003-003 **(D)**

What is the maximum distance along the Earth's surface that is normally covered in one hop using the E region?

A 300 km (190 miles)
B 4000 km (2500 miles)
C None, the E region does not support radio-wave propagation
D 2000 km (1250 miles)

B-007-003-004 **(A)**

Skip zone is:

A a zone between the end of the ground wave and the point where the first refracted wave returns to Earth
B a zone of silence caused by lost sky waves
C a zone between any two refracted waves
D a zone between the antenna and the return of the first refracted wave

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

The distance to Europe from your location is approximately 5000 km. What sort of propagation is the most likely to be involved?

A Back scatter
B Tropospheric scatter
C Multihop
D Sporadic "E"

B-007-003-006 **(C)**

For radio signals, the skip distance is determined by the:

A angle of radiation
B type of transmitting antenna used
C height of the ionosphere and the angle of radiation
D power fed to the power amplifier