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

Which of these measurements is a good indicator of VHF receiver performance in an environment of strong out-of-band signals?

A   Two-tone Third-Order IMD Dynamic Range, 10 MHz spacing

B   Third-Order Intercept Point

C   Blocking Dynamic Range

D   Intermediate frequency rejection ratio

A-007-001-001 **(C)**

For an antenna tuner of the "Transformer" type, which of the following statements is FALSE?

A   The output is suitable for impedances from low to high

B   The circuit is known as a transformer-type antenna tuner

C   The circuit is known as a Pi-type antenna tuner

D   The input is suitable for 50 ohm impedance

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

For an antenna tuner of the "Series" type, which of the following statements is false?

A   The circuit is known as a Pi-type antenna tuner

B   The circuit is known as a Series-type antenna tuner

C   The output is suitable for impedances from low to high

D   The input is suitable for impedance of 50 ohms

A-007-001-003 **(C)**

For an antenna tuner of the "L" type, which of the following statements is false?

A   The antenna output is high impedance

B   The circuit is known as an L-type antenna tuner

C   The circuit is suitable for matching to a vertical ground plane antenna

D   The transmitter input is suitable for 50 ohms impedance

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

For an antenna tuner of the "Pi" type, which of the following statements is false?

A   The circuit is a series-type antenna tuner

B   The transmitter input is suitable for impedance of 50 ohms

C   The antenna output is suitable for impedances from low to high

D   The circuit is a Pi-type antenna tuner

A-007-001-005 **(A)**

What is a pi-network?

A   A network consisting of one inductor and two capacitors or two inductors and one capacitor

B   An antenna matching network that is isolated from ground

C   A network consisting of four inductors or four capacitors

D   A power incidence network

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

Which type of network offers the greatest transformation ratio?

A   Chebyshev

B   Butterworth

C   L-network

D   Pi-network

A-007-001-007 **(A)**

Why is an L-network of limited utility in impedance matching?

A   It matches only a small impedance range

B   It is thermally unstable

C   It is prone to self-resonance

D   It has limited power handling capability

A-007-001-008 **(D)**

How does a network transform one impedance to another?

A   It produces transconductance to cancel the reactive part of an impedance

B   It introduces negative resistance to cancel the resistive part of an impedance

C   Network resistances substitute for load resistances

D   It cancels the reactive part of an impedance and changes the resistive part

A-007-001-009 **(D)**

What advantage does a pi-L network have over a pi-network for impedance matching between a vacuum tube linear amplifier and a multiband antenna?

A Higher efficiency
B Lower losses
C Greater transformation range
D Greater harmonic suppression

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

Which type of network provides the greatest harmonic suppression?

A Pi-L network
B Inverse pi-network
C Pi-network
D L-network

A-007-001-011 **(C)**

A Smith Chart is useful:

A to solve problems in direct current circuits
B because it only works with complex numbers
C because it simplifies mathematical operations
D only to solve matching and transmission line problems

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

What kind of impedance does a quarter wavelength transmission line present to the source when the line is shorted at the far end?

A A very low impedance
B A very high impedance
C The same as the characteristic impedance of the transmission line
D The same as the output impedance of the source

A-007-002-002 **(D)**

What kind of impedance does a quarter wavelength transmission line present to the source if the line is open at the far end?

A A very high impedance
B The same as the output impedance of the source
C The same as the characteristic impedance of the transmission line
D A very low impedance

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

What kind of impedance does a half wavelength transmission line present to the source when the line is open at the far end?

A A very high impedance
B The same as the characteristic impedance of the transmission line
C The same as the output impedance of the source
D A very low impedance

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

What kind of impedance does a half wavelength transmission line present to the source when the line is shorted at the far end?

A The same as the characteristic impedance of the transmission line
B The same as the output impedance of the source
C A very low impedance
D A very high impedance

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

What is the velocity factor of a transmission line?

A The velocity of the wave on the transmission line multiplied by the velocity of light in a vacuum
B The index of shielding for coaxial cable
C The ratio of the characteristic impedance of the line to the terminating impedance
D The velocity of the wave on the transmission line divided by the velocity of light

A-007-002-006   (C)

What is the term for the ratio of the actual velocity at which a signal travels through a transmission line to the speed of light in a vacuum?

A   Surge impedance
B   Standing wave ratio
C   Velocity factor
D   Characteristic impedance

A-007-002-007   (C)

What is a typical velocity factor for coaxial cable with polyethylene dielectric?

A   0.1
B   2.7
C   0.66
D   0.33

A-007-002-008   (C)

What determines the velocity factor in a transmission line?

A   The centre conductor resistivity
B   The terminal impedance
C   Dielectrics in the line
D   The line length

A-007-002-009   (A)

Why is the physical length of a coaxial cable shorter than its electrical length?

A   RF energy moves slower along the coaxial cable than in air
B   The surge impedance is higher in the parallel transmission line
C   Skin effect is less pronounced in the coaxial cable
D   The characteristic impedance is higher in a parallel transmission line

A-007-002-010   (D)

The reciprocal of the square root of the dielectric constant of the material used to separate the conductors in a transmission line gives the _____ of the line:

A   VSWR
B   impedance
C   hermetic losses
D   velocity factor

A-007-002-011   (C)

The velocity factor of a transmission line is the:

A   speed at which the signal travels in free space
B   speed to which the standing waves are reflected back to the transmitter
C   ratio of the velocity of propagation in the transmission line to the velocity of propagation in free space
D   impedance of the line, e.g. 50 ohm, 75 ohm, etc.

A-007-003-001   (B)

What term describes a method used to match a high-impedance transmission line to a lower impedance antenna by connecting the line to the driven element in two places, spaced a fraction of a wavelength on each side of the driven element centre?

A   The stub match
B   The T match
C   The gamma match
D   The omega match

A-007-003-002   (B)

What term describes an unbalanced feed system in which the driven element of an antenna is fed both at the centre and a fraction of a wavelength to one side of centre?

A   The T match
B   The gamma match
C   The omega match
D   The stub match

A-007-003-003   (B)

What term describes a method of antenna impedance matching that uses a short section of transmission line connected to the antenna transmission line near the antenna and perpendicular to the transmission line?

A   The gamma match
B   The stub match
C   The omega match
D   The delta match

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

Assuming a velocity factor of 0.66 what would be the physical length of a typical coaxial stub that is electrically one quarter wavelength long at 14.1 MHz?

A   20 metres (65.6 feet)

B   2.33 metres (7.64 feet)

C   0.25 metre (0.82 foot)

D   3.51 metres (11.5 feet)

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

The driven element of a Yagi antenna is connected to a coaxial transmission line. The coax braid is connected to the centre of the driven element and the centre conductor is connected to a variable capacitor in series with an adjustable mechanical arrangement on one side of the driven element. The type of matching is:

A   T match

B   zeta match

C   gamma match

D   lambda match

A-007-003-006 **(A)**

A quarter-wave stub, for use at 15 MHz, is made from a coaxial cable having a velocity factor of 0.8. Its physical length will be:

A   4 m (13.1 ft)

B   12 m (39.4 ft)

C   8 m (26.2 ft)

D   7.5 m (24.6 ft)

A-007-003-007 **(C)**

The matching of a driven element with a single adjustable mechanical and capacitive arrangement is descriptive of:

A   an "omega" match

B   a "Y" match

C   a "gamma" match

D   a "T" match

A-007-003-008 **(D)**

A Yagi antenna uses a gamma match. The coaxial braid connects to:

A   the variable capacitor

B   the adjustable gamma rod

C   the centre of the reflector

D   the centre of the driven element

A-007-003-009 **(C)**

A Yagi antenna uses a gamma match. The centre of the driven element connects to:

A   the adjustable gamma rod

B   a variable capacitor

C   the coaxial line braid

D   the coaxial line centre conductor

A-007-003-010 **(B)**

A Yagi antenna uses a gamma match. The adjustable gamma rod connects to:

A   the centre of the driven element

B   the variable capacitor

C   the coaxial line centre conductor

D   an adjustable point on the reflector

A-007-003-011 **(A)**

A Yagi antenna uses a gamma match. The variable capacitor connects to the:

A   adjustable gamma rod

B   an adjustable point on the director

C   center of the driven element

D   coaxial line braid

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

In a half-wave dipole, the distribution of _____ is highest at each end.

A   voltage

B   current

C   inductance

D   capacitance

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

In a half-wave dipole, the distribution of _____ is lowest at each end.

A   voltage

B   inductance

C   capacitance

D   current

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

The feed point in a centre-fed half-wave antenna is at the point of:

A   maximum current

B   minimum current

C   minimum voltage and current

D   maximum voltage

A-007-004-004 **(D)**

In a half-wave dipole, the lowest distribution of _____ occurs at the middle.

A capacity
B inductance
C current
D voltage

A-007-004-005 **(D)**

In a half-wave dipole, the highest distribution of _____ occurs at the middle.

A inductance
B voltage
C capacity
D current

A-007-004-006 **(D)**

A half-wave dipole antenna is normally fed at the point where:

A the voltage is maximum
B the resistance is maximum
C the antenna is resonant
D the current is maximum

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

At the ends of a half-wave dipole:

A voltage is low and current is high
B voltage is high and current is low
C voltage and current are both high
D voltage and current are both low

A-007-004-008 **(A)**

The impedance of a half-wave antenna at its centre is low, because at this point:

A voltage is low and current is high
B voltage and current are both high
C voltage and current are both low
D voltage is high and current is low

A-007-004-009 **(C)**

In a half-wave dipole, where does minimum voltage occur?

A It is equal at all points
B Both ends
C The centre
D At the right end

A-007-004-010 **(B)**

In a half-wave dipole, where does the minimum current occur?

A At the right end
B At both ends
C At the centre
D It is equal at all points

A-007-004-011 **(A)**

In a half-wave dipole, where does the minimum impedance occur?

A At the centre
B It is the same at all points
C At the right end
D At both ends

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

What is meant by circularly polarized electromagnetic waves?

A Waves produced by a circular loop antenna
B Waves with a rotating electric field
C Waves with an electric field bent into circular shape
D Waves that circle the earth

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

What type of polarization is produced by crossed dipoles fed 90 degrees out of phase?

A None of the other answers, the two fields cancel out
B Circular polarization
C Cross-polarization
D Perpendicular polarization

A-007-005-003 **(D)**

Which of these antennas does not produce circular polarization?

A Crossed dipoles fed 90 degrees out of phase
B Lindenblad antenna
C Axial-mode helical antenna
D Loaded helical-wound antenna

A-007-005-004 **(A)**

On VHF/UHF frequencies, Doppler shift becomes of consequence on which type of communication?

A Contact via satellite

B Contact through a hilltop repeater

C Simplex line-of-sight contact between hand-held transceivers

D Contact with terrestrial mobile stations

A-007-005-005 **(C)**

For VHF and UHF signals over a fixed path, what extra loss can be expected when linearly-polarized antennas are crossed-polarized (90 degrees)?

A 6 dB

B 10 dB

C 20 dB or more

D 3 dB

A-007-005-006 **(C)**

Which of the following is NOT a valid parabolic dish illumination arrangement?

A Offset feed

B Cassegrain

C Newtonian

D Front feed

A-007-005-007 **(A)**

A parabolic antenna is very efficient because:

A all the received energy is focused to a point where the pick-up antenna is located

B a dipole antenna can be used to pick up the received energy

C no impedance matching is required

D a horn-type radiator can be used to trap the received energy

A-007-005-008 **(B)**

A helical-beam antenna with right-hand polarization will best receive signals with:

A horizontal polarization

B right-hand polarization

C left-hand polarization

D vertical polarization only

A-007-005-009 **(C)**

One antenna which will respond simultaneously to vertically- and horizontally-polarized signals is the:

A ground-plane antenna

B quad antenna

C helical-beam antenna

D folded dipole antenna

A-007-005-010 **(A)**

In amateur work, what is the surface error upper limit you should try not to exceed on a parabolic reflector?

A 0.1 lambda

B 0.25 lambda

C 5 mm (0.2 in) regardless of frequency

D 1% of the diameter

A-007-005-011 **(C)**

You want to convert a surplus parabolic dish for amateur radio use, the gain of this antenna depends on:

A the focal length of the antenna

B the material composition of the dish

C the diameter of the antenna in wavelengths

D the polarization of the feed device illuminating it

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

A transmitter has an output of 100 watts. The cable and connectors have a composite loss of 3 dB, and the antenna has a gain of 6 dBd. What is the Effective Radiated Power?

A 400 watts

B 300 watts

C 200 watts

D 350 watts

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

As standing wave ratio rises, so does the loss in the transmission line. This is caused by:

A high antenna currents

B high antenna voltage

C leakage to ground through the dielectric

D dielectric and conductor heat losses