Chapter 7.1 – Quiz 1 – Dipoles and Ground-planes

G4E01 - What is the purpose of a capacitance hat on a mobile antenna?

* A. To increase the power handling capacity of a whip antenna
* B. To reduce radiation resistance
* C. To electrically lengthen a physically short antenna
* D. To lower the radiation angle

G4E02 - What is the purpose of a corona ball on an HF mobile antenna?

* A. To narrow the operating bandwidth of the antenna
* B. To increase the "Q" of the antenna
* C. To reduce the chance of damage if the antenna should strike an object
* D. To reduce RF voltage discharge from the tip of the antenna while transmitting

G4E06 - What is one disadvantage of using a shortened mobile antenna as opposed to a full-size antenna?

* A. Short antennas are more likely to cause distortion of transmitted signals
* B. Q of the antenna will be very low
* C. Operating bandwidth may be very limited
* D. Harmonic radiation may increase

G9B02 - Which of the following is a common way to adjust the feed point impedance of an elevated quarter-wave ground-plane vertical antenna to be approximately 50 ohms?

* A. Slope the radials upward
* B. Slope the radials downward
* C. Lengthen the radials beyond one wavelength
* D. Coil the radials

G9B03 - Which of the following best describes the radiation pattern of a quarter-wave ground-plane vertical antenna?

* A. Bi-directional in azimuth
* B. Isotropic
* C. Hemispherical
* D. Omnidirectional in azimuth

G9B04 - What is the radiation pattern of a dipole antenna in free space in a plane containing the conductor?

* A. It is a figure-eight at right angles to the antenna
* B. It is a figure-eight off both ends of the antenna
* C. It is a circle (equal radiation in all directions)
* D. It has a pair of lobes on one side of the antenna and a single lobe on the other side

G9B05 - How does antenna height affect the azimuthal radiation pattern of a horizontal dipole HF antenna at elevation angles higher than about 45 degrees?

* A. If the antenna is too high, the pattern becomes unpredictable
* B. Antenna height has no effect on the pattern
* C. If the antenna is less than 1/2 wavelength high, the azimuthal pattern is almost omnidirectional
* D. If the antenna is less than 1/2 wavelength high, radiation off the ends of the wire is eliminated

G9B06 - Where should the radial wires of a ground-mounted vertical antenna system be placed?

* A. As high as possible above the ground
* B. Parallel to the antenna element
* C. On the surface or buried a few inches below the ground
* D. At the center of the antenna

G9B07 - How does the feed point impedance of a horizontal 1/2 wave dipole antenna change as the antenna height is reduced to 1/10 wavelength above ground?

* A. It steadily increases
* B. It steadily decreases
* C. It peaks at about 1/8 wavelength above ground
* D. It is unaffected by the height above ground

G9B08 - How does the feed point impedance of a 1/2 wave dipole change as the feed point is moved from the center toward the ends?

* A. It steadily increases
* B. It steadily decreases
* C. It peaks at about 1/8 wavelength from the end
* D. It is unaffected by the location of the feed point

G9B09 - Which of the following is an advantage of using a horizontally polarized as compared to a vertically polarized HF antenna?

* A. Lower ground losses
* B. Lower feed point impedance
* C. Shorter radials
* D. Lower radiation resistance

G9B10 - What is the approximate length for a 1/2 wave dipole antenna cut for 14.250 MHz?

* A. 8 feet
* B. 16 feet
* C. 24 feet
* D. 33 feet

G9B11 - What is the approximate length for a 1/2 wave dipole antenna cut for 3.550 MHz?

* A. 42 feet
* B. 84 feet
* C. 132 feet
* D. 263 feet

G9B12 - What is the approximate length for a 1/4 wave monopole antenna cut for 28.5 MHz?

* A. 8 feet
* B. 11 feet
* C. 16 feet
* D. 21 feet

G9C04 - How does antenna gain in dBi compare to gain stated in dBd for the same antenna?

* A. Gain in dBi is 2.15 dB lower
* B. Gain in dBi is 2.15 dB higher
* C. Gain in dBd is 1.25 dBd lower
* D. Gain in dBd is 1.25 dBd higher

G9D01 - Which of the following antenna types will be most effective as a near vertical incidence skywave (NVIS) antenna for short-skip communications on 40 meters during the day?

* A. A horizontal dipole placed between 1/10 and 1/4 wavelength above the ground
* B. A vertical antenna placed between 1/4 and 1/2 wavelength above the ground
* C. A horizontal dipole placed at approximately 1/2 wavelength above the ground
* D. A vertical dipole placed at approximately 1/2 wavelength above the ground

G9D02 - What is the feed point impedance of an end-fed half-wave antenna?

* A. Very low
* B. Approximately 50 ohms
* C. Approximately 300 ohms
* D. Very high

G9D08 - How does a "screwdriver" mobile antenna adjust its feed point impedance?

* A. By varying its body capacitance
* B. By varying the base loading inductance
* C. By extending and retracting the whip
* D. By deploying a capacitance hat

G9D12 - What is the common name of a dipole with a single central support?

* A. Inverted V
* B. Inverted L
* C. Sloper
* D. Lazy H

End of Quiz 1

Chapter 7.2 and 7.3 – Quiz 2 – Yagi, Loop, Antennas

G2D04 - Which of the following describes an azimuthal projection map?

* A. A map that shows accurate land masses
* B. A map that shows true bearings and distances from a specific location
* C. A map that shows the angle at which an amateur satellite crosses the equator
* D. A map that shows the number of degrees longitude that an amateur satellite appears to move westward at the equator with each orbit

G9C01 - Which of the following would increase the bandwidth of a Yagi antenna?

* A. Larger-diameter elements
* B. Closer element spacing
* C. Loading coils in series with the element
* D. Tapered-diameter elements

G9C02 - What is the approximate length of the driven element of a Yagi antenna?

* A. 1/4 wavelength
* B. 1/2 wavelength
* C. 3/4 wavelength
* D. 1 wavelength

G9C03 - How do the lengths of a three-element Yagi reflector and director compare to that of the driven element?

* A. The reflector is longer, and the director is shorter
* B. The reflector is shorter, and the director is longer
* C. They are all the same length
* D. Relative length depends on the frequency of operation

G9C05 - What is the primary effect of increasing boom length and adding directors to a Yagi antenna?

* A. Gain increases
* B. Beamwidth increases
* C. Front-to-back ratio decreases
* D. Resonant frequency is lower

G9C07 - What does "front-to-back ratio" mean in reference to a Yagi antenna?

* A. The number of directors versus the number of reflectors
* B. The relative position of the driven element with respect to the reflectors and directors
* C. The power radiated in the major lobe compared to that in the opposite direction
* D. The ratio of forward gain to dipole gain

G9C08 - What is meant by the "main lobe" of a directive antenna?

* A. The magnitude of the maximum vertical angle of radiation
* B. The point of maximum current in a radiating antenna element
* C. The maximum voltage standing wave point on a radiating element
* D. The direction of maximum radiated field strength from the antenna

G9C10 - Which of the following can be adjusted to optimize forward gain, front-to-back ratio, or SWR bandwidth of a Yagi antenna?

* A. The physical length of the boom
* B. The number of elements on the boom
* C. The spacing of each element along the boom
* D. All these choices are correct

G9C11 - What is a beta or hairpin match?

* A. A shorted transmission line stub placed at the feed point of a Yagi antenna to provide impedance matching
* B. A 1/4 wavelength section of 75-ohm coax in series with the feed point of a Yagi to provide impedance matching
* C. A series capacitor selected to cancel the inductive reactance of a folded dipole antenna
* D. A section of 300-ohm twin-lead transmission line used to match a folded dipole antenna

G9C12 - Which of the following is a characteristic of using a gamma match with a Yagi antenna?

* A. It does not require the driven element to be insulated from the boom
* B. It does not require any inductors or capacitors
* C. It is useful for matching multiband antennas
* D. All these choices are correct

G9D03 - In which direction is the maximum radiation from a VHF/UHF "halo" antenna?

* A. Broadside to the plane of the halo
* B. Opposite the feed point
* C. Omnidirectional in the plane of the halo
* D. On the same side as the feed point

G9D10 - In which direction or directions does an electrically small loop (less than 1/10 wavelength in circumference) have nulls in its radiation pattern?

* A. In the plane of the loop
* B. Broadside to the loop
* C. Broadside and in the plane of the loop
* D. Electrically small loops are omnidirectional

End of Quiz 2

Chapter 7.4 – Quiz 3 – Specialized Antennas – (Please forgive the small print; I wanted to squeeze it onto one page)

G9B01 - What is a characteristic of a random-wire HF antenna connected directly to the transmitter?

* A. It must be longer than 1 wavelength
* B. Station equipment may carry significant RF current
* C. It produces only vertically polarized radiation
* D. It is more effective on the lower HF bands than on the higher bands

G9C09 - In free space, how does the gain of two three-element, horizontally polarized Yagi antennas spaced vertically 1/2 wavelength apart typically compare to the gain of a single three-element Yagi?

* A. Approximately 1.5 dB higher
* B. Approximately 3 dB higher
* C. Approximately 6 dB higher
* D. Approximately 9 dB higher

G9D04 - What is the primary function of antenna traps?

* A. To enable multiband operation
* B. To notch spurious frequencies
* C. To provide balanced feed point impedance
* D. To prevent out-of-band operation

G9D05 - What is an advantage of vertically stacking horizontally polarized Yagi antennas?

* A. It allows quick selection of vertical or horizontal polarization
* B. It allows simultaneous vertical and horizontal polarization
* C. It narrows the main lobe in azimuth
* D. It narrows the main lobe in elevation

G9D06 - Which of the following is an advantage of a log-periodic antenna?

* A. Wide bandwidth
* B. Higher gain per element than a Yagi antenna
* C. Harmonic suppression
* D. Polarization diversity

G9D07 - Which of the following describes a log-periodic antenna?

* A. Element length and spacing vary logarithmically along the boom
* B. Impedance varies periodically as a function of frequency
* C. Gain varies logarithmically as a function of frequency
* D. SWR varies periodically as a function of boom length

G9D09 - What is the primary use of a Beverage antenna?

* A. Directional receiving for MF and low HF bands
* B. Directional transmitting for low HF bands
* C. Portable direction finding at higher HF frequencies
* D. Portable direction finding at lower HF frequencies

G9D11 - Which of the following is a disadvantage of multiband antennas?

* A. They present low impedance on all design frequencies
* B. They must be used with an antenna tuner
* C. They must be fed with open wire line
* D. They have poor harmonic rejection (End of Quiz 3)