Definitions of Technical Terms

Terms	Definitions
Ammeter	▪ How is an ammeter usually connected… = In series with the circuit ▪ What instrument is used to measure electric current? = An ammeter ▪ Ammeter calibrated in amperes used to measure a 3000-milliampere current = reading shows 3 amperes
Amperes, Amps	▪ Electrical unit of current ▪ Intensity of the movement of charge in a conductor ▪ See Ohm's Law questions.
Band	▪ What property of radio waves is often used to identify the different frequency bands? = The approximate wavelength
Capacitor	▪ Stores energy in an electric field ▪ Consists of two or more conductive surfaces separated by an insulator ▪ Used together with an inductor to make a tuned circuit ▪ Unit of capacitance is the Farad or microfarad ▪ What kind of hazard might exist in a power supply when it is turned off and disconnected? = Electric shock from stored charge in large capacitors ▪ Component 6 in figure T2
Carrier Squelch	▪ Muting receiver audio solely by the presence or absence of an RF signal
Diode	▪ Allows current to flow in only one direction ▪ Cathode lead usually identified? = With a stripe ▪ Names of the electrodes of a diode = Anode and cathode
Dipole	▪ Simple dipole mounted so the conductor is parallel to the Earth's surface = A horizontally polarized antenna ▪ Change a dipole antenna to make it resonant on a higher frequency? = Shorten it ▪ Approximate length, in inches, of a 6 meter ½ wavelength wire dipole antenna? = 112 ▪ Approximate length, in inches, of a quarter-wavelength vertical antenna for 146MHz? = 19 ▪ In which direction is the radiation strongest from a half-wave dipole antenna in free space? = Broadside to the antenna

Doppler shift	▪ A change in signal frequency caused by motion of the transmitting station
Electromagnetic	▪ Type of wave that carries radio signals between transmitting & receiving stations ▪ Usual name for electromagnetic waves that travel through space = Radio waves
Farad	▪ Basic unit of capacitance
Frequency	▪ # of times alternating current flows back & forth in one second ▪ Hz = one time per second (or one cycle per second) ▪ 300/(Wavelength in meters) = Frequency in MHz
Fuse	▪ Purpose = To interrupt power in case of overload ▪ Unwise to install a 20ampere fuse in the place of a 5-ampere fuse = Excessive current could cause a fire ▪ Safety equipment should always be included in home-built equipment that is powered from 120V AC power circuits = a fuse or circuit breaker in series with the AC "hot" conductor ▪ What electrical component is used to protect other circuit components from current overloads? = Fuse
Hertz	▪ Unit of frequency ▪ One cycle per second ▪ What is the formula for converting frequency to wavelength in meters? = Wavelength in meters equals 300 divided by frequency in megahertz ▪ What is another way to specify a radio signal frequency of 1,500,000 hertz? = 1500 kHz ▪ If a frequency readout calibrated in megahertz shows a reading of 3.525 MHz, what would it show if it were calibrated in kilohertz? = 3525 kHz
Inductance, Inductor	▪ Stores energy in a magnetic field ▪ Basic unit of inductance = The Henry ▪ Usually composed of a coil of wire ▪ Component 3 in figure T3 ▪ Used together with a capacitor to make a tuned circuit
LED	▪ Light Emitting Diode ▪ Component 8 in figure T2
Meters	▪ Wavelength ▪ 300/(Frequency in MHz) = Wavelength in meters
microfarad	▪ 1,000,000 picofarads = 1 microfarad

microvolt	▪ One one-millionth of a volt ▪ How many volts are equal to one kilovolt? = One thousand volts ▪ How many volts ▪ are equal to one microvolt? = One one-millionth of a volt
milliampere	▪ 1/1000 Ampere ▪ 1.5 amperes = 1,500 milliamperes
Ohms	▪ Resistance ▪ Impedance of most commonly used coaxial cable in typical amateur radio installations = 50 ohms ▪ See Ohm's Law questions
Oscillator	▪ Used in a simple CW transmitter
Picket Fencing	▪ Rapid fluttering sound from mobile stations moving while transmitting
picofarad	▪ 1,000,000 picofarads = 1 microfarad
Potentiometer	▪ Adjustable volume control ▪ Controls electrical parameter of Resistance
Radio Waves	▪ Electromagnetic waves change direction greater than 20,000 times/second ▪ Travels speed of light, 300 million meters/second
Rectifier	▪ Changes alternating current to varying direct current signal
Relay	▪ Switch controlled by electromagnet
Resistance	▪ Oppose the flow of current in a DC circuit ▪ See Ohm's Law questions
Resistor	▪ Opposes flow of current in DC Current
Single Sideband	▪ Form of amplitude modulation ▪ SSB ▪ Normallyused for 10 meter HF, VHF and UHF single-sideband communications = Upper sideband ▪ Primary advantage of single sideband over FM for voice transmissions? = SSB signals have narrower bandwidth ▪ Approximate bandwidth of a single sideband voice signal? = 3 kHz ▪ Control could be used if the voice pitch of a single-sideband signal seems too high or low? = The receiver RIT or clarifier ▪ Type of voice modulation most often used for long-distance or weak signals contacts on the VHF and UHF bands

Squelch Control	▪ Mute receiver output noise when no signal is being received
Transistor	▪ Component capable of using voltage or current signal to control flow ▪ Electronic switch or amplifier ▪ Three layers of semiconductor material? = Bipolar junction transistor ▪ Which of the following electronic components can amplify signals? = Transistor ▪ What does the abbreviation "FET" stand for? = Field ▪ effect transistor ▪ What is the term that describes a transistor's ability to amplify a signal? =Gain ▪ Which semiconductor component has a gate electrode? = Field effect transistor ▪ Component 2 in figure T1

UHF and VHF	▪ Very High Frequency, Ultra High Frequency ▪ Radiation type is non-ionizing ▪ Which of the following types of feedline has the lowest loss at VHF and UHF? = Air-insulated hard line ▪ Why are UHF signals often more effective from inside buildings than VHF signals? = The shorter wavelength allows them to more easily penetrate the structure of buildings ▪ What antenna polarization is normally used for long-distance weak-signal CW and SSB contacts using the VHF and UHF bands? = Horizontal ▪ What can happen if the antennas at opposite ends of a VHF or UHF line of sight radio link are not using the same polarization? = Signals could be significantly weaker. ▪ What may occur if VHF or UHF data signals propagate over multiple paths? Error rates are likely to increase ▪ Why are "direct" (not via a repeater) UHF signals rarely heard from stations outside your local coverage area? = UHF signals are usually not reflected by the ionosphere ▪ What mode is responsible for allowing over-the-horizon VHF and UHF communications to ranges of approximately 300 miles on a regular basis? = Tropospheric scatter ▪ Why do VHF and UHF radio signals usually travel somewhat farther than the visual line of sight distance between two stations? = The Earth seems less curved to radio waves than to light.

Volts	▪ Basic unit of electromotive force (EMF) that causes electron flow ▪ Lowest voltage that can cause a dangerous electric shock? = 30 volts ▪ How many volts are equal to one kilovolt? = One thousand volts ▪ How many volts are equal to one microvolt? One one-millionth of a volt ▪ Which instrument would you use to measure electric potential or electromotive force? = A voltmeter ▪ What is the correct way to connect a voltmeter to a circuit? = In parallel with the circuit ▪ Which of the following might damage a multimeter? = Attempting to measure voltage when using the resistance setting ▪ See Ohm's Law questions
Watt	▪ Electrical power is measured in Watts ▪ Power (Watts) = Volts times Amps ▪ P = E x I ▪ Maximum power level that an amateur radio station may use at frequencies above 430MHz before an RF exposure evaluation is required = 50 Watts PEP at the antenna ▪ Equivalent to 500 milliwatts? = 0.5 watts ▪ Maximum power allowed when transmitting telecommand signals to radio controlled models? = 1 watt
Wavelength	▪ Distance radio wave travels in one complete cycle ▪ Measured in meters ▪ How does the wavelength of a radio wave relate to its frequency? The wavelengthgets shorter as the frequency increases ▪ Wavelength in meters equals 300 divided by frequency in megahertz ▪ Bands are named by wavelength: 1.25m, 2m, 6m, etc. ▪ What property of radio waves is often used to identify the different frequency bands? = The approximate wavelength ▪ What is the approximate length, in inches, of a quarter-wavelength vertical antenna for 146 MHz? = 19 ▪ What is the approximate length, in inches, of a 6 meter ½-wavelength wire dipole antenna? = 112