Ham Radio Technician Exam Question Pool (Valid from June 2014 – June 2018)

Quest #	Question and Correct Answer
T0A01	**Which of the following is a safety hazard of a 12-volt storage battery?** B. Shorting the terminals can cause burns, fire, or an explosion
T0A02	**How does current flowing through the body cause a health hazard?** A. By heating tissue B. It disrupts the electrical functions of cells C. It causes involuntary muscle contractions **D. All of these choices are correct**
T0A03	**What is connected to the green wire in a three-wire electrical AC plug?** C. Safety ground
T0A04	**What is the purpose of a fuse in an electrical circuit?** B. To interrupt power in case of overload
T0A05	**Why is it unwise to install a 20-ampere fuse in the place of a 5-ampere fuse?** C. Excessive current could cause a fire
T0A06	**What is a good way to guard against electrical shock at your station?** A. Use three-wire cords and plugs for all AC powered equipment B. Connect all AC powered station equipment to a common safety ground C. Excessive current could cause a fire **D. All of these choices are correct**
T0A07	**Which of these precautions should be taken when installing devices for lightning protection in a coaxial cable feed line?** D. Ground all of the protectors to a common plate which is in turn connected to an external ground
T0A08	**What safety equipment should always be included in home-built equipment that is powered from 120V AC power circuits?** A. A fuse or circuit breaker in series with the AC hot conductor
T0A09	**What kind of hazard is presented by a conventional 12-volt storage battery?** C. Explosive gas can collect if not properly vented
T0A10	**What can happen if a lead-acid storage battery is charged or discharged too quickly?** A. The battery could overheat and give off flammable gas or explode
T0A11	**What kind of hazard might exist in a power supply when it is turned off and disconnected?** D. You might receive an electric shock from the charged stored in large capacitors
T0B01	**When should members of a tower work team wear a hard hat and safety glasses?** C. At all times when any work is being done on the tower
T0B02	**What is a good precaution to observe before climbing an antenna tower?** C. Put on a climbing harness and safety glasses
T0B03	**Under what circumstances is it safe to climb a tower without a helper or observer?** D. Never
T0B04	**Which of the following is an important safety precaution to observe when putting up an antenna tower?** C. Look for and stay clear of any overhead electrical wires
T0B05	**What is the purpose of a gin pole?** C. To lift tower sections or antennas
T0B06	**What is the minimum safe distance from a power line to allow when installing an antenna?** D. So that if the antenna falls unexpectedly, no part of it can come closer than 10 feet to the power wires
T0B07	**Which of the following is an important safety rule to remember when using a crank-up tower?** C. This type of tower must never be climbed unless it is in the fully retracted position
T0B08	**What is considered to be a proper grounding method for a tower?** C. Separate eight-foot long ground rods for each tower leg, bonded to the tower and each other
T0B09	**Why should you avoid attaching an antenna to a utility pole?** C. The antenna could contact high-voltage power wires
T0B10	**Which of the following is true concerning grounding conductors used for lightning protection?** C. Sharp bends must be avoided
T0B11	**Which of the following establishes grounding requirements for an amateur radio tower or antenna?** B. Local electrical codes

T0B12	**Which of the following is good practice when installing ground wires on a tower for lightning protection?** C. Ensure that connections are short and direct
T0C01	**What type of radiation are VHF and UHF radio signals?** D. Non-ionizing radiation
T0C02	**Which of the following frequencies has the lowest value for Maximum Permissible Exposure limit?** B. 50 MHz
T0C03	**What is the maximum power level that an amateur radio station may use at VHF frequencies before an RF exposure evaluation is required?** C. 50 watts PEP at the antenna
T0C04	**What factors affect the RF exposure of people near an amateur station antenna?** A. Frequency and power level of the RF field B. Distance from the antenna to a person C. Radiation pattern of the antenna **D. All of these choices are correct**
T0C05	**Why do exposure limits vary with frequency?** D. The human body absorbs more RF energy at some frequencies than at others
T0C06	**Which of the following is an acceptable method to determine that your station complies with FCC RF exposure regulations?** A. By calculation based on FCC OET Bulletin 65 B. By calculation based on computer modeling C. By measurement of field strength using calibrated equipment **D. All of these choices are correct**
T0C07	**What could happen if a person accidentally touched your antenna while you were transmitting?** B. They might receive a painful RF burn
T0C08	**Which of the following actions might amateur operators take to prevent exposure to RF radiation in excess of FCC-supplied limits?** A. Relocate antennas
T0C09	**How can you make sure your station stays in compliance with RF safety regulations?** B. By re-evaluating the station whenever an item of equipment is changed
T0C10	**Why is duty cycle one of the factors used to determine safe RF radiation exposure levels?** A. It affects the average exposure of people to radiation
T0C11	**What is the definition of duty cycle during the averaging time for RF exposure?** C. The percentage of time that a transmitter is transmitting
T0C12	**How does RF radiation differ from ionizing radiation (radioactivity)?** A. RF radiation does not have sufficient energy to cause genetic damage
T0C13	**If the averaging time for exposure is 6 minutes, how much power density is permitted if the signal is present for 3 minutes and absent for 3 minutes rather than being present for the entire 6 minutes?** C. 2 times as much
T1A01	**Which of the following is a purpose of the Amateur Radio Service as stated in the FCC rules and regulations?** C. Advancing skills in the technical and communication phases of the radio art
T1A02	Which agency regulates and enforces the rules for the Amateur Radio Service in the United States? C. The FCC
T1A03	**Which part of the FCC regulations contains the rules governing the Amateur Radio Service?** D. Part 97
T1A04	**Which of the following meets the FCC definition of harmful interference?** C. That which seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with the Radio Regulations
T1A05	**Which of the following is a purpose of the Amateur Radio Service rules and regulations as defined by the FCC?** A. Enhancing international goodwill
T1A06	**Which of the following services are protected from interference by amateur signals under all circumstances?** D. Radionavigation Service
T1A07	**What is the FCC Part 97 definition of telemetry?** C. A one-way transmission of measurements at a distance from the measuring instrument

T1A08	**Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?** B. Frequency Coordinator
T1A09	**Who selects a Frequency Coordinator?** C. Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations
T1A10	**What is the FCC Part 97 definition of an amateur station?** A. A station in the Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications
T1A11	**When is willful interference to other amateur radio stations permitted?** B. At no time
T1A12	**Which of the following is a permissible use of the Amateur Radio Service?** D. Allowing a person to conduct radio experiments and to communicate with other licensed hams around the world
T1A13	**What is the FCC Part 97 definition of telecommand?** C. A one-way transmission to initiate, modify or terminate functions of a device at a distance
T1A14	**What must you do if you are operating on the 23 cm band and learn that you are interfering with a radiolocation station outside the United States?** A. Stop operating or take steps to eliminate the harmful interference
T1B01	**What is the ITU?** B. A United Nations agency for information and communication technology issues
T1B02	**Why are the frequency assignments for some U.S. Territories different from those in the 50 U.S. States?** A. Some U. S. Territories are located in ITU regions other than region 2
T1B03	**Which frequency is within the 6 meter band?** B. 52.525 MHz
T1B04	**Which amateur band are you using when your station is transmitting on 146.52 MHz?** A. 2 meter band
T1B05	**Which 70 cm frequency is authorized to a Technician Class license holder operating in ITU Region 2?** C. 443.350 MHz
T1B06	**Which 23 cm frequency is authorized to a Technician Class licensee?** B. 1296 MHz
T1B07	**What amateur band are you using if you are transmitting on 223.50 MHz?** D. 1.25 meter band
T1B08	**Which of the following is a result of the fact that the amateur service is secondary in some portions of the 70 cm band?** A. U.S. amateurs may find non-amateur stations in the bands, and must avoid interfering with them
T1B09	**Why should you not set your transmit frequency to be exactly at the edge of an amateur band or sub-band?** A. To allow for calibration error in the transmitter frequency display B. So that modulation sidebands do not extend beyond the band edge C. To allow for transmitter frequency drift **D. All of these choices are correct**
T1B10	**Which of the bands above 30 MHz that are available to Technician Class operators have mode-restricted sub-bands?** C. The 6 meter, 2 meter, and 1.25 meter bands
T1B11	**What emission modes are permitted in the mode-restricted sub-bands at 50.0 to 50.1 MHz and 144.0 to 144.1 MHz?** A. CW only
T1B12	**Why are frequency assignments for U.S. stations operating maritime mobile not the same everywhere in the world?** B. Amateur frequency assignments can vary among the three ITU regions
T1B13	**Which emission may be used between 219 and 220 MHz?** B. Data
T1C01	**Which type of call sign has a single letter in both its prefix and suffix?** C. Special event
T1C02	**Which of the following is a valid US amateur radio station call sign?** B. W3ABC
T1C03	**What types of international communications are permitted by an FCC-licensed amateur station?** A. Communications incidental to the purposes of the amateur service and remarks of a personal character
T1C04	**When are you allowed to operate your amateur station in a foreign country?**

	A. When the foreign country authorizes it
T1C05	**Which of the following is a vanity call sign which a technician class amateur operator might select if available?** A. K1XXX
T1C06	**From which of the following locations may an FCC-licensed amateur station transmit, in addition to places where the FCC regulates communications?** D. From any vessel or craft located in international waters and documented or registered in the United States
T1C07	**What may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct mailing address?** B. Revocation of the station license or suspension of the operator license
T1C08	**What is the normal term for an FCC-issued primary station/operator amateur radio license grant?** C. Ten years
T1C09	**What is the grace period following the expiration of an amateur license within which the license may be renewed?** A. Two years
T1C10	**How soon after passing the examination for your first amateur radio license may you operate a transmitter on an amateur service frequency?** C. As soon as your operator/station license grant appears in the FCC's license database
T1C11	**If your license has expired and is still within the allowable grace period, may you continue to operate a transmitter on amateur service frequencies?** A. No, transmitting is not allowed until the FCC license database shows that the license has been renewed
T1C12	**Who may select a desired call sign under the vanity call sign rules?** D. Any licensed amateur
T1C14	**Who may select a vanity call sign for a club station?** D. Only the person named as trustee on the club station license grant
T1D01	**With which countries are FCC-licensed amateur stations prohibited from exchanging communications?** A. Any country whose administration has notified the ITU that it objects to such communications
T1D02	**On which of the following occasions may an FCC-licensed amateur station exchange messages with a U.S. military station?** A. During an Armed Forces Day Communications Test
T1D03	**When is the transmission of codes or ciphers that hide the meaning of a message allowed by an amateur station?** C. Only when transmitting control commands to space stations or radio control craft
T1D04	**What is the only time an amateur station is authorized to transmit music?** A. When incidental to an authorized retransmission of manned spacecraft communications
T1D05	**When may amateur radio operators use their stations to notify other amateurs of the availability of equipment for sale or trade?** A. When the equipment is normally used in an amateur station and such activity is not conducted on a regular basis
T1D06	**What, if any, are the restrictions concerning transmission of language that may be considered indecent or obscene?** B. Any such language is prohibited
T1D07	**What types of amateur stations can automatically retransmit the signals of other amateur stations?** B. Auxiliary, repeater, or space stations
T1D08	**In which of the following circumstances may the control operator of an amateur station receive compensation for operating the station?** B. When the communication is incidental to classroom instruction at an educational institution
T1D09	**Under which of the following circumstances are amateur stations authorized to transmit signals related to broadcasting, program production, or news gathering, assuming no other means is available?** A. Only where such communications directly relate to the immediate safety of human life or protection of property
T1D10	**What is the meaning of the term "broadcasting" in the FCC rules for the amateur services?** D. Transmissions intended for reception by the general public
T1D11	**When may an amateur station transmit without identifying?** D. When transmitting signals to control a model craft
T1D12	**Under which of the following circumstances may an amateur radio station engage in broadcasting?** B. When transmitting code practice, information bulletins, or transmissions necessary to provide emergency communications
T1E01	**When is an amateur station permitted to transmit without a control operator?**

	D. Never
T1E02	**Who may a station licensee designate to be the control operator of an amateur station?** D. Only a person for whom an amateur operator/primary station license grant appears in the FCC database or who is authorized for alien reciprocal operation
T1E03	**Who must designate the station control operator?** A. The station licensee
T1E04	**What determines the transmitting privileges of an amateur station?** D. The class of operator license held by the control operator
T1E05	**What is an amateur station control point?** C. The location at which the control operator function is performed
T1E06	**Under what type of control do APRS network digipeaters operate?** A. Automatic
T1E07	**When the control operator is not the station licensee, who is responsible for the proper operation of the station?** D. The control operator and the station licensee are equally responsible
T1E08	**Which of the following is an example of automatic control?** A. Repeater operation
T1E09	**What type of control is being used when the control operator is at the control point?** D. Local control
T1E10	**Which of the following is an example of remote control as defined in Part 97?** B. Operating the station over the Internet
T1E11	**Who does the FCC presume to be the control operator of an amateur station, unless documentation to the contrary is in the station records?** D. The station licensee
T1E12	**When, under normal circumstances, may a Technician Class licensee be the control operator of a station operating in an exclusive Extra Class operator segment of the amateur bands?** A. At no time
T1F01	**What type of identification is being used when identifying a station on the air as Race Headquarters?** A. Tactical call sign
T1F02	**When using tactical identifiers such as "Race Headquarters" during a community service net operation, how often must your station transmit the station's FCC-assigned call sign?** C. At the end of each communication and every ten minutes during a communication
T1F03	**When is an amateur station required to transmit its assigned call sign?** D. At least every 10 minutes during and at the end of a communication
T1F04	**Which of the following is an acceptable language to use for station identification when operating in a phone sub-band?** C. The English language
T1F05	**What method of call sign identification is required for a station transmitting phone signals?** B. Send the call sign using CW or phone emission
T1F06	**Which of the following formats of a self-assigned indicator is acceptable when identifying using a phone transmission?** A. KL7CC stroke W3 B. KL7CC slant W3 C. KL7CC slash W3 **D. All of these choices are correct**
T1F07	**Which of the following restrictions apply when a non-licensed person is allowed to speak to a foreign station using a station under the control of a Technician Class control operator?** B. The foreign station must be one with which the U.S. has a third party agreement
T1F08	**Which indicator is required by the FCC to be transmitted after a station call sign?** D. /KT, /AE or /AG when using new license privileges earned by CSCE while waiting for an upgrade to a previously issued license to appear in the FCC license database
T1F09	**What type of amateur station simultaneously retransmits the signal of another amateur station on a different channel or channels?** C. Repeater station

T1F10	**Who is accountable should a repeater inadvertently retransmit communications that violate the FCC rules?** A. The control operator of the originating station
T1F11	**To which foreign stations do the FCC rules authorize the transmission of non-emergency third party communications?** A. Any station whose government permits such communications
T1F12	**How many persons are required to be members of a club for a club station license to be issued by the FCC?** B. At least 4
T1F13	**When must the station licensee make the station and its records available for FCC inspection?** B. At any time upon request by an FCC representative
T2A01	**What is the most common repeater frequency offset in the 2 meter band?** B. Plus or minus 600 kHz
T2A02	**What is the national calling frequency for FM simplex operations in the 70 cm band?** D. 446.000 MHz
T2A03	**What is a common repeater frequency offset in the 70 cm band?** A. Plus or minus 5 MHz
T2A04	**What is an appropriate way to call another station on a repeater if you know the other station's call sign?** B. Say the station's call sign then identify with your call sign
T2A05	**How should you respond to a station calling CQ?** C. Transmit the other station's call sign followed by your call sign
T2A06	**What must an amateur operator do when making on-air transmissions to test equipment or antennas?** A. Properly identify the transmitting station
T2A07	**Which of the following is true when making a test transmission?** D. Station identification is required at least every ten minutes during the test and at the end of the test
T2A08	**What is the meaning of the procedural signal "CQ"?** D. Calling any station
T2A09	**What brief statement is often transmitted in place of "CQ" to indicate that you are listening on a repeater?** B. Your call sign
T2A10	**What is a band plan, beyond the privileges established by the FCC?** A. A voluntary guideline for using different modes or activities within an amateur band
T2A11	**Which of the following is an FCC rule regarding power levels used in the amateur bands, under normal, non-distress circumstances?** D. While not exceeding the maximum power permitted on a given band, use the minimum power necessary to carry out the desired communication
T2A12	**Which of the following is a guideline to use when choosing an operating frequency for calling CQ?** A. Listen first to be sure that no one else is using the frequency B. Ask if the frequency is in use C. Make sure you are in your assigned band **D. All of these choices are correct**
T2B01	**What is the term used to describe an amateur station that is transmitting and receiving on the same frequency?** C. Simplex communication
T2B02	**What is the term used to describe the use of a sub-audible tone transmitted with normal voice audio to open the squelch of a receiver?** D. CTCSS
T2B03	**Which of the following describes the muting of receiver audio controlled solely by the presence or absence of an RF signal?** B. Carrier squelch
T2B04	**Which of the following common problems might cause you to be able to hear but not access a repeater even when transmitting with the proper offset?** A. The repeater receiver may require an audio tone burst for access B. The repeater receiver may require a CTCSS tone for access C. The repeater receiver may require a DCS tone sequence for access **D. All of these choices are correct**
T2B05	**What determines the amount of deviation of an FM (as opposed to PM) signal?**

	C. The amplitude of the modulating signal
T2B06	**What happens when the deviation of an FM transmitter is increased?** A. Its signal occupies more bandwidth
T2B07	**What could cause your FM signal to interfere with stations on nearby frequencies?** A. Microphone gain too high, causing over-deviation
T2B08	**Which of the following applies when two stations transmitting on the same frequency interfere with each other?** A. Common courtesy should prevail, but no one has absolute right to an amateur frequency
T2B09	**Which of the following methods is encouraged by the FCC when identifying your station when using phone?** A. Use of a phonetic alphabet
T2B10	**Which Q signal indicates that you are receiving interference from other stations?** A. QRM
T2B11	**Which Q signal indicates that you are changing frequency?** B. QSY
T2B12	**Under what circumstances should you consider communicating via simplex rather than a repeater?** A. When the stations can communicate directly without using a repeater
T2B13	**Which of the following is true of the use of SSB phone in amateur bands above 50 MHz?** C. It is permitted in at least some portion of all the amateur bands above 50 MHz
T2C01	**When do the FCC rules NOT apply to the operation of an amateur station?** D. Never, FCC rules always apply
T2C02	**What is one way to recharge a 12-volt lead-acid station battery if the commercial power is out?** C. Connect the battery in parallel with a vehicle's battery and run the engine
T2C03	**What should be done to insure that voice message traffic containing proper names and unusual words are copied correctly by the receiving station?** C. Such words and terms should be spelled out using a standard phonetic alphabet
T2C04	**What do RACES and ARES have in common?** D. Both organizations may provide communications during emergencies
T2C05	**Which of the following describes the Radio Amateur Civil Emergency Service (RACES)?** A. A radio service using amateur frequencies for emergency management or civil defense communications B. A radio service using amateur stations for emergency management or civil defense communications C. An emergency service using amateur operators certified by a civil defense organization as being enrolled in that organization **D. All of these choices are correct**
T2C06	**Which of the following is an accepted practice to get the immediate attention of a net control station when reporting an emergency?** C. Begin your transmission by saying "Priority" or "Emergency" followed by your call sign
T2C07	**Which of the following is an accepted practice for an amateur operator who has checked into an emergency traffic net?** C. Remain on frequency without transmitting until asked to do so by the net control station
T2C08	**Which of the following is a characteristic of good emergency traffic handling?** A. Passing messages exactly as received
T2C09	**Are amateur station control operators ever permitted to operate outside the frequency privileges of their license class?** D. Yes, but only if necessary in situations involving the immediate safety of human life or protection of property
T2C10	**What is the preamble in a formal traffic message?** D. The information needed to track the message as it passes through the amateur radio traffic handling system
T2C11	**What is meant by the term "check" in reference to a formal traffic message?** A. The check is a count of the number of words or word equivalents in the text portion of the message
T2C12	**What is the Amateur Radio Emergency Service (ARES)?** A. Licensed amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public service
T3A01	**What should you do if another operator reports that your station's 2 meter signals were strong just a moment ago, but now they are weak or distorted?** D. Try moving a few feet or changing the direction of your antenna if possible, as reflections may be causing multi-

	path distortion
T3A02	**Why are UHF signals often more effective from inside buildings than VHF signals?** B. The shorter wavelength allows them to more easily penetrate the structure of buildings
T3A03	**What antenna polarization is normally used for long-distance weak-signal CW and SSB contacts using the VHF and UHF bands?** C. Horizontal
T3A04	**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?** B. Signals could be significantly weaker
T3A05	**When using a directional antenna, how might your station be able to access a distant repeater if buildings or obstructions are blocking the direct line of sight path?** B. Try to find a path that reflects signals to the repeater
T3A06	**What term is commonly used to describe the rapid fluttering sound sometimes heard from mobile stations that are moving while transmitting?** B. Picket fencing
T3A07	**What type of wave carries radio signals between transmitting and receiving stations?** A. Electromagnetic
T3A08	**Which of the following is a likely cause of irregular fading of signals received by ionospheric reflection?** C. Random combining of signals arriving via different paths
T3A09	**Which of the following results from the fact that skip signals refracted from the ionosphere are elliptically polarized?** B. Either vertically or horizontally polarized antennas may be used for transmission or reception
T3A10	**What may occur if data signals propagate over multiple paths?** D. Error rates are likely to increase
T3A11	**Which part of the atmosphere enables the propagation of radio signals around the world?** C. The ionosphere
T3B01	**What is the name for the distance a radio wave travels during one complete cycle?** C. Wavelength
T3B02	**What property of a radio wave is used to describe its polarization?** A. The orientation of the electric field
T3B03	**What are the two components of a radio wave?** C. Electric and magnetic fields
T3B04	**How fast does a radio wave travel through free space?** A. At the speed of light
T3B05	**How does the wavelength of a radio wave relate to its frequency?** B. The wavelength gets shorter as the frequency increases
T3B06	**What is the formula for converting frequency to approximate wavelength in meters?** D. Wavelength in meters equals 300 divided by frequency in megahertz
T3B07	**What property of radio waves is often used to identify the different frequency bands?** A. The approximate wavelength
T3B08	**What are the frequency limits of the VHF spectrum?** B. 30 to 300 MHz
T3B09	**What are the frequency limits of the UHF spectrum?** D. 300 to 3000 MHz
T3B10	**What frequency range is referred to as HF?** C. 3 to 30 MHz
T3B11	**What is the approximate velocity of a radio wave as it travels through free space?** B. 300,000,000 meters per second
T3C01	**Why are direct (not via a repeater) UHF signals rarely heard from stations outside your local coverage area?** C. UHF signals are usually not reflected by the ionosphere
T3C02	**Which of the following might be happening when VHF signals are being received from long distances?** D. Signals are being refracted from a sporadic E layer
T3C03	**What is a characteristic of VHF signals received via auroral reflection?** B. The signals exhibit rapid fluctuations of strength and often sound distorted

T3C04	**Which of the following propagation types is most commonly associated with occasional strong over-the-horizon signals on the 10, 6, and 2 meter bands?** B. Sporadic E
T3C05	**Which of the following effects might cause radio signals to be heard despite obstructions between the transmitting and receiving stations?** A. Knife-edge diffraction
T3C06	**What mode is responsible for allowing over-the-horizon VHF and UHF communications to ranges of approximately 300 miles on a regular basis?** A. Tropospheric scatter
T3C07	**What band is best suited for communicating via meteor scatter?** B. 6 meters
T3C08	**What causes tropospheric ducting?** D. Temperature inversions in the atmosphere
T3C09	**What is generally the best time for long-distance 10 meter band propagation via the F layer?** A. From dawn to shortly after sunset during periods of high sunspot activity
T3C10	**What is the radio horizon?** A. The distance over which two stations can communicate by direct path
T3C11	**Why do VHF and UHF radio signals usually travel somewhat farther than the visual line of sight distance between two stations?** C. The Earth seems less curved to radio waves than to light
T3C12	**Which of the following bands may provide long distance communications during the peak of the sunspot cycle?** A. Six or ten meters
T4A01	**Which of the following is true concerning the microphone connectors on amateur transceivers?** B. Some connectors include push-to-talk and voltages for powering the microphone
T4A02	**How might a computer be used as part of an amateur radio station?** A. For logging contacts and contact information B. For sending and/or receiving CW C. For generating and decoding digital signals **D. All of these choices are correct**
T4A03	**Which is a good reason to use a regulated power supply for communications equipment?** A. It prevents voltage fluctuations from reaching sensitive circuits
T4A04	**Where must a filter be installed to reduce harmonic emissions from your station?** A. Between the transmitter and the antenna
T4A05	**Where should an in-line SWR meter be connected to monitor the standing wave ratio of the station antenna system?** A. In series with the feed line, between the transmitter and antenna
T4A06	**Which of the following would be connected between a transceiver and computer in a packet radio station?** C. Terminal node controller
T4A07	**How is a computer's sound card used when conducting digital communications using a computer?** C. The sound card provides audio to the microphone input and converts received audio to digital form
T4A08	**Which type of conductor is best to use for RF grounding?** D. Flat strap
T4A09	**Which of the following could you use to cure distorted audio caused by RF current flowing on the shield of a microphone cable?** D. Ferrite choke
T4A10	**What is the source of a high-pitched whine that varies with engine speed in a mobile transceiver's receive audio?** B. The alternator
T4A11	**Where should the negative return connection of a mobile transceiver's power cable be connected?** A. At the battery or engine block ground strap
T4A12	**What could be happening if another operator reports a variable high-pitched whine on the audio from your mobile transmitter?** D. Noise on the vehicle's electrical system is being transmitted along with your speech audio
T4B01	**What may happen if a transmitter is operated with the microphone gain set too high?** B. The output signal might become distorted

T4B02	**Which of the following can be used to enter the operating frequency on a modern transceiver?** A. The keypad or VFO knob
T4B03	**What is the purpose of the squelch control on a transceiver?** D. To mute receiver output noise when no signal is being received
T4B04	**What is a way to enable quick access to a favorite frequency on your transceiver?** B. Store the frequency in a memory channel
T4B05	**Which of the following would reduce ignition interference to a receiver?** C. Turn on the noise blanker
T4B06	**Which of the following controls could be used if the voice pitch of a single-sideband signal seems too high or low?** D. The receiver RIT or clarifier
T4B07	**What does the term "RIT" mean?** B. Receiver Incremental Tuning
T4B08	**What is the advantage of having multiple receive bandwidth choices on a multimode transceiver?** B. Permits noise or interference reduction by selecting a bandwidth matching the mode
T4B09	**Which of the following is an appropriate receive filter bandwidth to select in order to minimize noise and interference for SSB reception?** C. 2400 Hz
T4B10	**Which of the following is an appropriate receive filter bandwidth to select in order to minimize noise and interference for CW reception?** A. 500 Hz
T4B11	**Which of the following describes the common meaning of the term "repeater offset"?** C. The difference between the repeater's transmit and receive frequencies
T4B12	**What is the function of automatic gain control or AGC?** A. To keep received audio relatively constant
T5A01	**Electrical current is measured in which of the following units?** D. Amperes
T5A02	**Electrical power is measured in which of the following units?** B. Watts
T5A03	**What is the name for the flow of electrons in an electric circuit?** D. Current
T5A04	**What is the name for a current that flows only in one direction?** B. Direct current
T5A05	**What is the electrical term for the electromotive force (EMF) that causes electron flow?** A. Voltage
T5A06	**How much voltage does a mobile transceiver usually require?** A. About 12 volts
T5A07	**Which of the following is a good electrical conductor?** C. Copper
T5A08	**Which of the following is a good electrical insulator?** B. Glass
T5A09	**What is the name for a current that reverses direction on a regular basis?** A. Alternating current
T5A10	**Which term describes the rate at which electrical energy is used?** C. Power
T5A11	**What is the basic unit of electromotive force?** A. The volt
T5A12	**What term describes the number of times per second that an alternating current reverses direction?** D. Frequency
T5B01	**How many milliamperes is 1.5 amperes?** C. 1,500 milliamperes
T5B02	**What is another way to specify a radio signal frequency of 1,500,000 hertz?** A. 1500 kHz
T5B03	**How many volts are equal to one kilovolt?**

	C. One thousand volts
T5B04	**How many volts are equal to one microvolt?** A. One one-millionth of a volt
T5B05	**Which of the following is equivalent to 500 milliwatts?** B. 0.5 watts
T5B06	**If an ammeter calibrated in amperes is used to measure a 3000-milliampere current, what reading would it show?** C. 3 amperes
T5B07	**If a frequency readout calibrated in megahertz shows a reading of 3.525 MHz, what would it show if it were calibrated in kilohertz?** C. 3525 kHz
T5B08	**How many microfarads are 1,000,000 picofarads?** B. 1 microfarad
T5B09	**What is the approximate amount of change, measured in decibels (dB), of a power increase from 5 watts to 10 watts?** B. 3 dB
T5B10	**What is the approximate amount of change, measured in decibels (dB), of a power decrease from 12 watts to 3 watts?** C. -6 dB
T5B11	**What is the approximate amount of change, measured in decibels (dB), of a power increase from 20 watts to 200 watts?** A. 10 dB
T5B12	**Which of the following frequencies is equal to 28,400 kHz?** A. 28.400 MHz
T5B13	**If a frequency readout shows a reading of 2425 MHz, what frequency is that in GHz?** C. 2.425 GHz
T5C01	**What is the ability to store energy in an electric field called?** D. Capacitance
T5C02	**What is the basic unit of capacitance?** A. The farad
T5C03	**What is the ability to store energy in a magnetic field called?** D. Inductance
T5C04	**What is the basic unit of inductance?** C. The henry
T5C05	**What is the unit of frequency?** A. Hertz
T5C06	**What does the abbreviation "RF" refer to?** A. Radio frequency signals of all types
T5C07	**What is a usual name for electromagnetic waves that travel through space?** C. Radio waves
T5C08	**What is the formula used to calculate electrical power in a DC circuit?** A. Power (P) equals voltage (E) multiplied by current (I)
T5C09	**How much power is being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes?** A. 138 watts
T5C10	**How much power is being used in a circuit when the applied voltage is 12 volts DC and the current is 2.5 amperes?** B. 30 watts
T5C11	**How many amperes are flowing in a circuit when the applied voltage is 12 volts DC and the load is 120 watts?** B. 10 amperes
T5C12	**What is meant by the term impedance?** A. It is a measure of the opposition to AC current flow in a circuit
T5C13	**What are the units of impedance?** D. Ohms
T5D01	**What formula is used to calculate current in a circuit?** B. Current (I) equals voltage (E) divided by resistance (R)

T5D02	**What formula is used to calculate voltage in a circuit?** A. Voltage (E) equals current (I) multiplied by resistance (R)
T5D03	**What formula is used to calculate resistance in a circuit?** B. Resistance (R) equals voltage (E) divided by current (I)
T5D04	**What is the resistance of a circuit in which a current of 3 amperes flows through a resistor connected to 90 volts?** B. 30 ohms
T5D05	**What is the resistance in a circuit for which the applied voltage is 12 volts and the current flow is 1.5 amperes?** C. 8 ohms
T5D06	**What is the resistance of a circuit that draws 4 amperes from a 12-volt source?** A. 3 ohms
T5D07	**What is the current flow in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?** D. 1.5 amperes
T5D08	**What is the current flowing through a 100-ohm resistor connected across 200 volts?** C. 2 amperes
T5D09	**What is the current flowing through a 24-ohm resistor connected across 240 volts?** C. 10 amperes
T5D10	**What is the voltage across a 2-ohm resistor if a current of 0.5 amperes flows through it?** A. 1 volt
T5D11	**What is the voltage across a 10-ohm resistor if a current of 1 ampere flows through it?** B. 10 volts
T5D12	**What is the voltage across a 10-ohm resistor if a current of 2 amperes flows through it?** D. 20 volts
T6A01	**What electrical component is used to oppose the flow of current in a DC circuit?** B. Resistor
T6A02	**What type of component is often used as an adjustable volume control?** C. Potentiometer
T6A03	**What electrical parameter is controlled by a potentiometer?** B. Resistance
T6A04	**What electrical component stores energy in an electric field?** B. Capacitor
T6A05	**What type of electrical component consists of two or more conductive surfaces separated by an insulator?** D. Capacitor
T6A06	**What type of electrical component stores energy in a magnetic field?** C. Inductor
T6A07	**What electrical component is usually composed of a coil of wire?** D. Inductor
T6A08	**What electrical component is used to connect or disconnect electrical circuits?** B. Switch
T6A09	**What electrical component is used to protect other circuit components from current overloads?** A. Fuse
T6A10	**Which of the following battery types is rechargeable?** A. Nickel-metal hydride B. Lithium-ion C. Lead-acid gel-cell **D. All of these choices are correct**
T6A11	**Which of the following battery types is not rechargeable?** B. Carbon-zinc
T6B01	**What class of electronic components is capable of using a voltage or current signal to control current flow?** D. Transistors
T6B02	**What electronic component allows current to flow in only one direction?** C. Diode
T6B03	**Which of these components can be used as an electronic switch or amplifier?** C. Transistor

T6B04	**Which of the following components can be made of three layers of semiconductor material?** B. Transistor
T6B05	**Which of the following electronic components can amplify signals?** A. Transistor
T6B06	**How is the cathode lead of a semiconductor diode usually identified?** B. With a stripe
T6B07	**What does the abbreviation LED stand for?** B. Light Emitting Diode
T6B08	**What does the abbreviation FET stand for?** A. Field Effect Transistor
T6B09	**What are the names of the two electrodes of a diode?** C. Anode and cathode
T6B10	**What are the three electrodes of a PNP or NPN transistor?** A. Emitter, base, and collector
T6B11	**What at are the three electrodes of a field effect transistor?** B. Source, gate, and drain
T6B12	**What is the term that describes a transistor's ability to amplify a signal?** A. Gain
T6C01	**What is the name for standardized representations of components in an electrical wiring diagram?** C. Schematic symbols
T6C02	**What is component 1 in figure T1?** A. Resistor
T6C03	**What is component 2 in figure T1?** B. Transistor
T6C04	**What is component 3 in figure T1?** C. Lamp
T6C05	**What is component 4 in figure T1?** C. Battery
T6C06	**What is component 6 in figure T2?** B. Capacitor
T6C07	**What is component 8 in figure T2?** D. Light emitting diode
T6C08	**What is component 9 in figure T2?** C. Variable resistor
T6C09	**What is component 4 in figure T2?** D. Transformer
T6C10	**What is component 3 in figure T3?** D. Variable inductor
T6C11	**What is component 4 in figure T3?** A. Antenna
T6C12	**What do the symbols on an electrical circuit schematic diagram represent?** A. Electrical components
T6C13	**Which of the following is accurately represented in electrical circuit schematic diagrams?** C. The way components are interconnected
T6D01	**Which of the following devices or circuits changes an alternating current into a varying direct current signal?** B. Rectifier
T6D02	**What best describes a relay?** A. A switch controlled by an electromagnet
T6D03	**What type of switch is represented by component 3 in figure T2?** A. Single-pole single-throw
T6D04	**Which of the following can be used to display signal strength on a numeric scale?** C. Meter
T6D05	**What type of circuit controls the amount of voltage from a power supply?**

	A. Regulator
T6D06	**What component is commonly used to change 120V AC house current to a lower AC voltage for other uses?** B. Transformer
T6D07	**Which of the following is commonly used as a visual indicator?** A. LED
T6D08	**Which of the following is used together with an inductor to make a tuned circuit?** D. Capacitor
T6D09	**What is the name of a device that combines several semiconductors and other components into one package?** C. Integrated circuit
T6D10	**What is the function of component 2 in Figure T1?** C. Control the flow of current
T6D11	**What is a simple resonant or tuned circuit?** A. An inductor and a capacitor connected in series or parallel to form a filter
T6D12	**Which of the following is a common reason to use shielded wire?** C. To prevent coupling of unwanted signals to or from the wire
T7A01	**Which term describes the ability of a receiver to detect the presence of a signal?** B. Sensitivity
T7A02	**What is a transceiver?** B. A unit combining the functions of a transmitter and a receiver
T7A03	**Which of the following is used to convert a radio signal from one frequency to another?** B. Mixer
T7A04	**Which term describes the ability of a receiver to discriminate between multiple signals?** C. Selectivity
T7A05	**What is the name of a circuit that generates a signal of a desired frequency?** D. Oscillator
T7A06	**What device takes the output of a low-powered 28 MHz SSB exciter and produces a 222 MHz output signal?** C. Transverter
T7A07	**What is meant by term "PTT"?** D. The push to talk function which switches between receive and transmit
T7A08	**Which of the following describes combining speech with an RF carrier signal?** C. Modulation
T7A09	**Which of the following devices is most useful for VHF weak-signal communication?** B. A multi-mode VHF transceiver
T7A10	**What device increases the low-power output from a handheld transceiver?** B. An RF power amplifier
T7A11	**Where is an RF preamplifier installed?** A. Between the antenna and receiver
T7B01	**What can you do if you are told your FM handheld or mobile transceiver is over-deviating?** D. Talk farther away from the microphone
T7B02	**What would cause a broadcast AM or FM radio to receive an amateur radio transmission unintentionally?** A. The receiver is unable to reject strong signals outside the AM or FM band
T7B03	**Which of the following may be a cause of radio frequency interference?** A. Fundamental overload B. Harmonics C. Spurious emissions **D. All of these choices are correct**
T7B04	**Which of the following is a way to reduce or eliminate interference by an amateur transmitter to a nearby telephone?** D. Put a RF filter on the telephone
T7B05	**How can overload of a non-amateur radio or TV receiver by an amateur signal be reduced or eliminated?** A. Block the amateur signal with a filter at the antenna input of the affected receiver
T7B06	**Which of the following actions should you take if a neighbor tells you that your station's transmissions are interfering with their radio or TV reception?**

	A. Make sure that your station is functioning properly and that it does not cause interference to your own radio or television when it is tuned to the same channel
T7B07	**Which of the following may be useful in correcting a radio frequency interference problem?** A. Snap-on ferrite chokes B. Low-pass and high-pass filters C. Band-reject and band-pass filters **D. All of these choices are correct**
T7B08	**What should you do if something in a neighbor's home is causing harmful interference to your amateur station?** A. Work with your neighbor to identify the offending device B. Politely inform your neighbor about the rules that prohibit the use of devices which cause interference C. Check your station and make sure it meets the standards of good amateur practice **D. All of these choices are correct**
T7B09	**What is a Part 15 device?** A. An unlicensed device that may emit low powered radio signals on frequencies used by a licensed service
T7B10	**What might be the problem if you receive a report that your audio signal through the repeater is distorted or unintelligible?** A. Your transmitter may be slightly off frequency B. Your batteries may be running low C. You could be in a bad location **D. All of these choices are correct**
T7B11	**What is a symptom of RF feedback in a transmitter or transceiver?** C. Reports of garbled, distorted, or unintelligible transmissions
T7B12	**What might be the first step to resolve cable TV interference from your ham radio transmission?** D. Be sure all TV coaxial connectors are installed properly
T7C01	**What is the primary purpose of a dummy load?** A. To prevent the radiation of signals when making tests
T7C02	**Which of the following instruments can be used to determine if an antenna is resonant at the desired operating frequency?** B. An antenna analyzer
T7C03	**What, in general terms, is standing wave ratio (SWR)?** A. A measure of how well a load is matched to a transmission line
T7C04	**What reading on an SWR meter indicates a perfect impedance match between the antenna and the feed line?** C. 1 to 1
T7C05	**What is the approximate SWR value above which the protection circuits in most solid-state transmitters begin to reduce transmitter power?** A. 2 to 1
T7C06	**What does an SWR reading of 4:1 indicate?** D. Impedance mismatch
T7C07	**What happens to power lost in a feed line?** C. It is converted into heat
T7C08	**What instrument other than an SWR meter could you use to determine if a feed line and antenna are properly matched?** D. Directional wattmeter
T7C09	**Which of the following is the most common cause for failure of coaxial cables?** A. Moisture contamination
T7C10	**Why should the outer jacket of coaxial cable be resistant to ultraviolet light?** D. Ultraviolet light can damage the jacket and allow water to enter the cable
T7C11	**What is a disadvantage of air core coaxial cable when compared to foam or solid dielectric types?** C. It requires special techniques to prevent water absorption
T7C12	**Which of the following is a common use of coaxial cable?** B. Carrying RF signals between a radio and antenna
T7C13	**What does a dummy load consist of?** B. A non-inductive resistor and a heat sink

T7D01	**Which instrument would you use to measure electric potential or electromotive force?** B. A voltmeter
T7D02	**What is the correct way to connect a voltmeter to a circuit?** B. In parallel with the circuit
T7D03	**How is an ammeter usually connected to a circuit?** A. In series with the circuit
T7D04	**Which instrument is used to measure electric current?** D. An ammeter
T7D05	**What instrument is used to measure resistance?** D. An ohmmeter
T7D06	**Which of the following might damage a multimeter?** C. Attempting to measure voltage when using the resistance setting
T7D07	**Which of the following measurements are commonly made using a multimeter?** D. Voltage and resistance
T7D08	**Which of the following types of solder is best for radio and electronic use?** C. Rosin-core solder
T7D09	**What is the characteristic appearance of a cold solder joint?** C. A grainy or dull surface
T7D10	**What is probably happening when an ohmmeter, connected across an unpowered circuit, initially indicates a low resistance and then shows increasing resistance with time?** B. The circuit contains a large capacitor
T7D11	**Which of the following precautions should be taken when measuring circuit resistance with an ohmmeter?** B. Ensure that the circuit is not powered
T7D12	**Which of the following precautions should be taken when measuring high voltages with a voltmeter?** B. Ensure that the voltmeter and leads are rated for use at the voltages to be measured
T8A01	**Which of the following is a form of amplitude modulation?** C. Single sideband
T8A02	**What type of modulation is most commonly used for VHF packet radio transmissions?** A. FM
T8A03	**Which type of voice mode is most often used for long-distance (weak signal) contacts on the VHF and UHF bands?** C. SSB
T8A04	**Which type of modulation is most commonly used for VHF and UHF voice repeaters?** D. FM
T8A05	**Which of the following types of emission has the narrowest bandwidth?** C. CW
T8A06	**Which sideband is normally used for 10 meter HF, VHF and UHF single-sideband communications?** A. Upper sideband
T8A07	**What is the primary advantage of single sideband over FM for voice transmissions?** C. SSB signals have narrower bandwidth
T8A08	**What is the approximate bandwidth of a single sideband voice signal?** B. 3 kHz
T8A09	**What is the approximate bandwidth of a VHF repeater FM phone signal?** C. Between 10 and 15 kHz
T8A10	**What is the typical bandwidth of analog fast-scan TV transmissions on the 70 cm band?** B. About 6 MHz
T8A11	**What is the approximate maximum bandwidth required to transmit a CW signal?** B. 150 Hz
T8B01	**Who may be the control operator of a station communicating through an amateur satellite or space station?** D. Any amateur whose license privileges allow them to transmit on the satellite uplink frequency
T8B02	**How much transmitter power should be used on the uplink frequency of an amateur satellite or space station?** B. The minimum amount of power needed to complete the contact
T8B03	**Which of the following are provided by satellite tracking programs?** A. Maps showing the real-time position of the satellite track over the earth

	B. The time, azimuth, and elevation of the start, maximum altitude, and end of a pass C. The apparent frequency of the satellite transmission, including effects of Doppler shift **D. All of these answers are correct**
T8B04	**Which amateur stations may make contact with an amateur station on the International Space Station using 2 meter and 70 cm band amateur radio frequencies?** B. Any amateur holding a Technician or higher class license
T8B05	**What is a satellite beacon?** D. A transmission from a space station that contains information about a satellite
T8B06	**Which of the following are inputs to a satellite tracking program?** B. The Keplerian elements
T8B07	**With regard to satellite communications, what is Doppler shift?** C. An observed change in signal frequency caused by relative motion between the satellite and the earth station
T8B08	**What is meant by the statement that a satellite is operating in mode U/V?** B. The satellite uplink is in the 70 cm band and the downlink is in the 2 meter band
T8B09	**What causes spin fading when referring to satellite signals?** B. Rotation of the satellite and its antennas
T8B10	**What do the initials LEO tell you about an amateur satellite?** C. The satellite is in a Low Earth Orbit
T8B11	**What is a commonly used method of sending signals to and from a digital satellite?** C. FM Packet
T8C01	**Which of the following methods is used to locate sources of noise interference or jamming?** C. Radio direction finding
T8C02	**Which of these items would be useful for a hidden transmitter hunt?** B. A directional antenna
T8C03	**What popular operating activity involves contacting as many stations as possible during a specified period of time?** A. Contesting
T8C04	**Which of the following is good procedure when contacting another station in a radio contest?** C. Send only the minimum information needed for proper identification and the contest exchange
T8C05	**What is a grid locator?** A. A letter-number designator assigned to a geographic location
T8C06	**How is access to an IRLP node accomplished?** B. By using DTMF signals
T8C07	**What is the maximum power allowed when transmitting telecommand signals to radio controlled models?** B. 1 watt
T8C08	**What is required in place of on-air station identification when sending signals to a radio control model using amateur frequencies?** C. A label indicating the licensee's name, call sign and address must be affixed to the transmitter
T8C09	**How might you obtain a list of active nodes that use VoIP?** C. From a repeater directory
T8C10	**How do you select a specific IRLP node when using a portable transceiver?** D. Use the keypad to transmit the IRLP node ID
T8C11	**What name is given to an amateur radio station that is used to connect other amateur stations to the Internet?** A. A gateway
T8C12	**What is meant by Voice Over Internet Protocol (VoIP) as used in amateur radio?** D. A method of delivering voice communications over the Internet using digital techniques
T8C13	**What is the Internet Radio Linking Project (IRLP)?** A. A technique to connect amateur radio systems, such as repeaters, via the Internet using Voice Over Internet Protocol
T8D01	**Which of the following is an example of a digital communications method?** A. Packet B. PSK31 C. MFSK **D. All of these choices are correct**

T8D02	**What does the term "APRS" mean?** A. Automatic Packet Reporting System
T8D03	**Which of the following devices provides data to the transmitter when sending automatic position reports from a mobile amateur radio station?** D. A Global Positioning System receiver
T8D04	**What type of transmission is indicated by the term NTSC?** C. An analog fast scan color TV signal
T8D05	**Which of the following is an application of APRS (Automatic Packet Reporting System)?** A. Providing real time tactical digital communications in conjunction with a map showing the locations of stations
T8D06	**What does the abbreviation PSK mean?** B. Phase Shift Keying
T8D07	**What is PSK31?** D. A low-rate data transmission mode
T8D08	**Which of the following may be included in packet transmissions?** A. A check sum which permits error detection B. A header which contains the call sign of the station to which the information is being sent C. Automatic repeat request in case of error **D. All of these choices are correct**
T8D09	**What code is used when sending CW in the amateur bands?** C. International Morse
T8D10	**Which of the following can be used to transmit CW in the amateur bands?** A. Straight Key B. Electronic Keyer C. Computer Keyboard **D. All of these choices are correct**
T8D11	**What is an ARQ transmission system?** C. A digital scheme whereby the receiving station detects errors and sends a request to the sending station to retransmit the information
T9A01	**What is a beam antenna?** C. An antenna that concentrates signals in one direction
T9A02	**Which of the following is true regarding vertical antennas?** B. The electric field is perpendicular to the Earth
T9A03	**Which of the following describes a simple dipole mounted so the conductor is parallel to the Earth's surface?** B. A horizontally polarized antenna
T9A04	**What is a disadvantage of the "rubber duck" antenna supplied with most handheld radio transceivers?** A. It does not transmit or receive as effectively as a full-sized antenna
T9A05	**How would you change a dipole antenna to make it resonant on a higher frequency?** C. Shorten it
T9A06	**What type of antennas are the quad, Yagi, and dish?** C. Directional antennas
T9A07	**What is a good reason not to use a "rubber duck" antenna inside your car?** A. Signals can be significantly weaker than when it is outside of the vehicle
T9A08	**What is the approximate length, in inches, of a quarter-wavelength vertical antenna for 146 MHz?** C. 19
T9A09	**What is the approximate length, in inches, of a 6 meter 1/2-wavelength wire dipole antenna?** C. 112
T9A10	**In which direction is the radiation strongest from a half-wave dipole antenna in free space?** C. Broadside to the antenna
T9A11	**What is meant by the gain of an antenna?** C. The increase in signal strength in a specified direction when compared to a reference antenna
T9A12	**What is a reason to use a properly mounted 5/8 wavelength antenna for VHF or UHF mobile service?** A. It offers a lower angle of radiation and more gain than a 1/4 wavelength antenna and usually provides improved coverage

T9A13	**Why are VHF or UHF mobile antennas often mounted in the center of the vehicle roof?** C. A roof mounted antenna normally provides the most uniform radiation pattern
T9A14	**Which of the following terms describes a type of loading when referring to an antenna?** A. Inserting an inductor in the radiating portion of the antenna to make it electrically longer
T9B01	**Why is it important to have a low SWR in an antenna system that uses coaxial cable feed line?** B. To allow the efficient transfer of power and reduce losses
T9B02	**What is the impedance of the most commonly used coaxial cable in typical amateur radio installations?** B. 50 ohms
T9B03	**Why is coaxial cable used more often than any other feed line for amateur radio antenna systems?** A. It is easy to use and requires few special installation considerations
T9B04	**What does an antenna tuner do?** A. It matches the antenna system impedance to the transceiver's output impedance
T9B05	**What generally happens as the frequency of a signal passing through coaxial cable is increased?** D. The loss increases
T9B06	**Which of the following connectors is most suitable for frequencies above 400 MHz?** B. A Type N connector
T9B07	**Which of the following is true of PL-259 type coax connectors?** C. They are commonly used at HF frequencies
T9B08	**Why should coax connectors exposed to the weather be sealed against water intrusion?** A. To prevent an increase in feed line loss
T9B09	**What might cause erratic changes in SWR readings?** B. A loose connection in an antenna or a feed line
T9B10	**What electrical difference exists between the smaller RG-58 and larger RG-8 coaxial cables?** C. RG-8 cable has less loss at a given frequency
T9B11	**Which of the following types of feed line has the lowest loss at VHF and UHF?** C. Air-insulated hard line

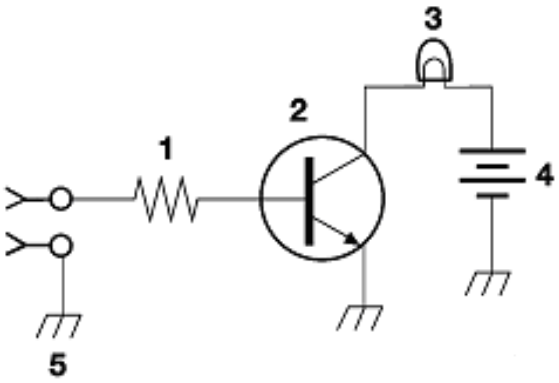

Figure T-1

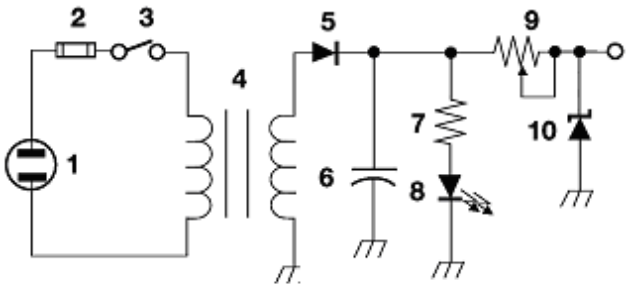

Figure T-2

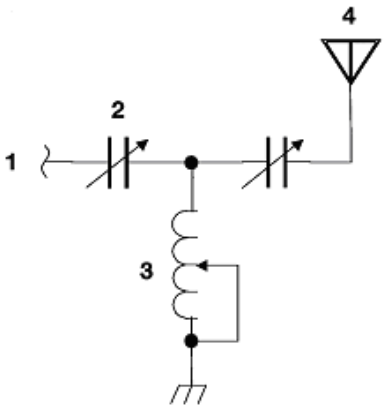

Figure T-3