FCC Exam Element 2 Question Pool for Technician Class
Effective 7/01/2018-6/30/2022

SUBELEMENT T7 – Station equipment: common transmitter and receiver problems; antenna measurements; troubleshooting; basic repair and testing – [4 Exam Questions - 4 Groups]

T7A – Station equipment: receivers; transmitters; transceivers; modulation; transverters; transmit and receive amplifiers

T7A01 (B)
Which term describes the ability of a receiver to detect the presence of a signal?
A. Linearity
B. Sensitivity
C. Selectivity
D. Total Harmonic Distortion
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T7A02 (B)
What is a transceiver?
A. A type of antenna switch
B. A unit combining the functions of a transmitter and a receiver
C. A component in a repeater that filters out unwanted interference
D. A type of antenna matching network
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T7A03 (B)
Which of the following is used to convert a radio signal from one frequency to another?
A. Phase splitter
B. Mixer
C. Inverter
D. Amplifier
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T7A04 (C)
Which term describes the ability of a receiver to discriminate between multiple signals?
A. Discrimination ratio
B. Sensitivity
C. Selectivity
D. Harmonic distortion
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T7A05 (D)
What is the name of a circuit that generates a signal at a specific frequency?
A. Reactance modulator
B. Product detector
C. Low-pass filter
D. Oscillator
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T7A06 (C)
What device converts the RF input and output of a transceiver to another band?
A. High-pass filter
B. Low-pass filter
C. Transverter
D. Phase converter
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T7A07 (D)
What is meant by "PTT"?
A. Pre-transmission tuning to reduce transmitter harmonic emission
B. Precise tone transmissions used to limit repeater access to only certain signals
C. A primary transformer tuner use to match antennas
D. The push-to-talk function that switches between receive and transmit
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T7A08 (C)
Which of the following describes combining speech with an RF carrier signal?
A. Impedance matching
B. Oscillation
C. Modulation
D. Low-pass filtering
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T7A09 (B)
What is the function of the SSB/CW-FM switch on a VHF power amplifier?
A. Change the mode of the transmitted signal
B. Set the amplifier for proper operation in the selected mode
C. Change the frequency range of the amplifier to operate in the proper portion of the band
D. Reduce the received signal noise
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T7A10 (B)
What device increases the low-power output from a handheld transceiver?
A. A voltage divider
B. An RF power amplifier
C. An impedance network
D. All of these choices are correct
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T7A11 (A)
Where is an RF preamplifier installed?
A. Between the antenna and receiver
B. At the output of the transmitter's power amplifier
C. Between a transmitter and antenna tuner
D. At the receiver's audio output
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T7B – Common transmitter and receiver problems: symptoms of overload and overdrive; distortion; causes of interference; interference and consumer electronics; part 15 devices; over-modulation; RF feedback; off frequency signals

T7B01 (D)
What can you do if you are told your FM handheld or mobile transceiver is over-deviating?
A. Talk louder into the microphone
B. Let the transceiver cool off
C. Change to a higher power level
D. Talk farther away from the microphone
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T7B02 (A)
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
B. The microphone gain of the transmitter is turned up too high
C. The audio amplifier of the transmitter is overloaded
D. The deviation of an FM transmitter is set too low
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T7B03 (D)
Which of the following can cause radio frequency interference?
A. Fundamental overload
B. Harmonics
C. Spurious emissions
D. All of these choices are correct
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T7B04 (D)
Which of the following is a way to reduce or eliminate interference from an amateur transmitter to a nearby telephone?
A. Put a filter on the amateur transmitter
B. Reduce the microphone gain
C. Reduce the SWR on the transmitter transmission line
D. Put an RF filter on the telephone
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T7B05 (A)
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
B. Block the interfering signal with a filter on the amateur transmitter
C. Switch the transmitter from FM to SSB
D. Switch the transmitter to a narrow-band mode
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T7B06 (A)
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
B. Immediately turn off your transmitter and contact the nearest FCC office for assistance
C. Tell them that your license gives you the right to transmit and nothing can be done to reduce the interference
D. Install a harmonic doubler on the output of your transmitter and tune it until the interference is eliminated
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T7B07 (D)
Which of the following can reduce overload to a VHF transceiver from a nearby FM broadcast station?
A. RF preamplifier
B. Double-shielded coaxial cable
C. Using headphones instead of the speaker
D. Band-reject filter
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T7B08 (D)
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 that cause interference
C. Check your station and make sure it meets the standards of good amateur practice
D. All of these choices are correct
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T7B09 (A)
What is a Part 15 device?
A. An unlicensed device that may emit low-powered radio signals on frequencies used by a licensed service
B. An amplifier that has been type-certified for amateur radio
C. A device for long-distance communications using special codes sanctioned by the International Amateur Radio Union
D. A type of test set used to determine whether a transmitter complies with FCC regulation 91.15
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T7B10 (D)
What might be a problem if you receive a report that your audio signal through the repeater is distorted or unintelligible?
A. Your transmitter is slightly off frequency
B. Your batteries are running low
C. You are in a bad location
D. All of these choices are correct
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T7B11 (C)
What is a symptom of RF feedback in a transmitter or transceiver?
A. Excessive SWR at the antenna connection
B. The transmitter will not stay on the desired frequency
C. Reports of garbled, distorted, or unintelligible voice transmissions
D. Frequent blowing of power supply fuses
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T7B12 (D)
What should be the first step to resolve cable TV interference from your ham radio transmission?
A. Add a low-pass filter to the TV antenna input
B. Add a high-pass filter to the TV antenna input
C. Add a preamplifier to the TV antenna input
D. Be sure all TV coaxial connectors are installed properly
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T7C – Antenna measurements and troubleshooting: measuring SWR; dummy loads; coaxial cables; causes of feed line failures

T7C01 (A)
What is the primary purpose of a dummy load?
A. To prevent transmitting signals over the air when making tests
B. To prevent over-modulation of a transmitter
C. To improve the efficiency of an antenna
D. To improve the signal-to-noise ratio of a receiver
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T7C02 (B)
Which of the following instruments can be used to determine if an antenna is resonant at the desired operating frequency?
A. A VTVM
B. An antenna analyzer
C. A Q meter
D. A frequency counter
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T7C03 (A)
What, in general terms, is standing wave ratio (SWR)?
A. A measure of how well a load is matched to a transmission line
B. The ratio of high to low impedance in a feed line
C. The transmitter efficiency ratio
D. An indication of the quality of your station’s ground connection
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T7C04 (C)
What reading on an SWR meter indicates a perfect impedance match between the antenna and the feed line?
A. 2 to 1
B. 1 to 3
C. 1 to 1
D. 10 to 1
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T7C05 (A)
Why do most solid-state amateur radio transmitters reduce output power as SWR increases?
A. To protect the output amplifier transistors
B. To comply with FCC rules on spectral purity
C. Because power supplies cannot supply enough current at high SWR
D. To improve the impedance match to the feed line
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T7C06 (D)
What does an SWR reading of 4:1 indicate?
A. Loss of -4 dB
B. Good impedance match
C. Gain of +4 dB
D. Impedance mismatch
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T7C07 (C)
What happens to power lost in a feed line?
A. It increases the SWR
B. It comes back into your transmitter and could cause damage
C. It is converted into heat
D. It can cause distortion of your signal
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T7C08 (D)
What instrument other than an SWR meter could you use to determine if a feed line and antenna are properly matched?
A. Voltmeter
B. Ohmmeter
C. Iambic pentameter
D. Directional wattmeter
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T7C09 (A)
Which of the following is the most common cause for failure of coaxial cables?
A. Moisture contamination
B. Gamma rays
C. The velocity factor exceeds 1.0
D. Overloading
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T7C10 (D)
Why should the outer jacket of coaxial cable be resistant to ultraviolet light?
A. Ultraviolet resistant jackets prevent harmonic radiation
B. Ultraviolet light can increase losses in the cable’s jacket
C. Ultraviolet and RF signals can mix, causing interference
D. Ultraviolet light can damage the jacket and allow water to enter the cable
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T7C11 (C)
What is a disadvantage of air core coaxial cable when compared to foam or solid dielectric types?
A. It has more loss per foot
B. It cannot be used for VHF or UHF antennas
C. It requires special techniques to prevent water absorption
D. It cannot be used at below freezing temperatures
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T7C12 (B)
What does a dummy load consist of?
A. A high-gain amplifier and a TR switch
B. A non-inductive resistor and a heat sink
C. A low-voltage power supply and a DC relay
D. A 50 ohm reactance used to terminate a transmission line
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T7D – Basic repair and testing: soldering; using basic test instruments; connecting a voltmeter, ammeter, or ohmmeter

T7D01 (B)
Which instrument would you use to measure electric potential or electromotive force?
A. An ammeter
B. A voltmeter
C. A wavemeter
D. An ohmmeter
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T7D02 (B)
What is the correct way to connect a voltmeter to a circuit?
A. In series with the circuit
B. In parallel with the circuit
C. In quadrature with the circuit
D. In phase with the circuit
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T7D03 (A)
How is a simple ammeter connected to a circuit?
A. In series with the circuit
B. In parallel with the circuit
C. In quadrature with the circuit
D. In phase with the circuit
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T7D04 (D)
Which instrument is used to measure electric current?
A. An ohmmeter
B. A wavemeter
C. A voltmeter
D. An ammeter
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T7D05 (D)
What instrument is used to measure resistance?
A. An oscilloscope
B. A spectrum analyzer
C. A noise bridge
D. An ohmmeter
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T7D06 (C)
Which of the following might damage a multimeter?
A. Measuring a voltage too small for the chosen scale
B. Leaving the meter in the milliamps position overnight
C. Attempting to measure voltage when using the resistance setting
D. Not allowing it to warm up properly
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T7D07 (D)
Which of the following measurements are commonly made using a multimeter?
A. SWR and RF power
B. Signal strength and noise
C. Impedance and reactance
D. Voltage and resistance
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T7D08 (C)
Which of the following types of solder is best for radio and electronic use?
A. Acid-core solder
B. Silver solder
C. Rosin-core solder
D. Aluminum solder
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T7D09 (C)
What is the characteristic appearance of a cold solder joint?
A. Dark black spots
B. A bright or shiny surface
C. A grainy or dull surface
D. A greenish tint
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T7D10 (B)
What is probably happening when an ohmmeter, connected across an unpowered circuit, initially indicates a low resistance and then shows increasing resistance with time?
A. The ohmmeter is defective
B. The circuit contains a large capacitor
C. The circuit contains a large inductor
D. The circuit is a relaxation oscillator
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T7D11 (B)
Which of the following precautions should be taken when measuring circuit resistance with an ohmmeter?
A. Ensure that the applied voltages are correct
B. Ensure that the circuit is not powered
C. Ensure that the circuit is grounded
D. Ensure that the circuit is operating at the correct frequency
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T7D12 (B)
Which of the following precautions should be taken when measuring high voltages with a voltmeter?
A. Ensure that the voltmeter has very low impedance
B. Ensure that the voltmeter and leads are rated for use at the voltages to be measured
C. Ensure that the circuit is grounded through the voltmeter
D. Ensure that the voltmeter is set to the correct frequency
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