

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

SUBELEMENT T8 - Modulation modes: amateur satellite operation; operating activities; non-voice and digital communications - [4 Exam Questions - 4 Groups]

T8A - Modulation modes: bandwidth of various signals; choice of emission type

T8A01 (C)

Which of the following is a form of amplitude modulation?

- A. Spread spectrum
- B. Packet radio
- C. Single sideband
- D. Phase shift keying (PSK)

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T8A02 (A)

What type of modulation is most commonly used for VHF packet radio transmissions?

- A. FM
- B. SSB
- C. AM
- D. PSK

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T8A03 (C)

Which type of voice mode is most often used for long-distance (weak signal) contacts on the VHF and UHF bands?

- A. FM
- B. DRM
- C. SSB
- D. PM

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T8A04 (D)

Which type of modulation is most commonly used for VHF and UHF voice repeaters?

- A. AM
- B. SSB
- C. PSK
- D. FM

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T8A05 (C)

Which of the following types of emission has the narrowest bandwidth?

- A. FM voice
- B. SSB voice
- C. CW
- D. Slow-scan TV

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T8A06 (A)

Which sideband is normally used for 10 meter HF, VHF, and UHF single-sideband communications?

- A. Upper sideband
- B. Lower sideband
- C. Suppressed sideband
- D. Inverted sideband

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T8A07 (C)

What is an advantage of single sideband (SSB) over FM for voice transmissions?

- A. SSB signals are easier to tune
- B. SSB signals are less susceptible to interference
- C. SSB signals have narrower bandwidth
- D. All of these choices are correct

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T8A08 (B)

What is the approximate bandwidth of a single sideband (SSB) voice signal?

- A. 1 kHz
- B. 3 kHz
- C. 6 kHz
- D. 15 kHz

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T8A09 (C)

What is the approximate bandwidth of a VHF repeater FM phone signal?

- A. Less than 500 Hz
- B. About 150 kHz
- C. Between 10 and 15 kHz
- D. Between 50 and 125 kHz

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T8A10 (B)

What is the typical bandwidth of analog fast-scan TV transmissions on the 70 centimeter band?

- A. More than 10 MHz
- B. About 6 MHz
- C. About 3 MHz
- D. About 1 MHz

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T8A11 (B)

What is the approximate maximum bandwidth required to transmit a CW signal?

- A. 2.4 kHz
- B. 150 Hz
- C. 1000 Hz
- D. 15 kHz

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T8B - Amateur satellite operation; Doppler shift; basic orbits; operating protocols; transmitter power considerations; telemetry and telecommand; satellite tracking

T8B01 (C)

What telemetry information is typically transmitted by satellite beacons?

- A. The signal strength of received signals
- B. Time of day accurate to plus or minus 1/10 second
- C. Health and status of the satellite
- D. All of these choices are correct

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T8B02 (B)

What is the impact of using too much effective radiated power on a satellite uplink?

- A. Possibility of commanding the satellite to an improper mode
- B. Blocking access by other users
- C. Overloading the satellite batteries
- D. Possibility of rebooting the satellite control computer

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T8B03 (D)

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 choices are correct

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T8B04 (D)

What mode of transmission is commonly used by amateur radio satellites?

- A. SSB
- B. FM
- C. CW/data
- D. All of these choices are correct

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T8B05 (D)

What is a satellite beacon?

- A. The primary transmit antenna on the satellite
- B. An indicator light that shows where to point your antenna
- C. A reflective surface on the satellite
- D. A transmission from a satellite that contains status information

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T8B06 (B)

Which of the following are inputs to a satellite tracking program?

- A. The weight of the satellite
- B. The Keplerian elements
- C. The last observed time of zero Doppler shift
- D. All of these choices are correct

T8B07 (C)

With regard to satellite communications, what is Doppler shift?

- A. A change in the satellite orbit
 - B. A mode where the satellite receives signals on one band and transmits on another
 - C. An observed change in signal frequency caused by relative motion between the satellite and the earth station
 - D. A special digital communications mode for some satellites
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T8B08 (B)

What is meant by the statement that a satellite is operating in mode U/V?

- A. The satellite uplink is in the 15 meter band and the downlink is in the 10 meter band
 - B. The satellite uplink is in the 70 centimeter band and the downlink is in the 2 meter band
 - C. The satellite operates using ultraviolet frequencies
 - D. The satellite frequencies are usually variable
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T8B09 (B)

What causes spin fading of satellite signals?

- A. Circular polarized noise interference radiated from the sun
 - B. Rotation of the satellite and its antennas
 - C. Doppler shift of the received signal
 - D. Interfering signals within the satellite uplink band
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T8B10 (C)

What do the initials LEO tell you about an amateur satellite?

- A. The satellite battery is in Low Energy Operation mode
 - B. The satellite is performing a Lunar Ejection Orbit maneuver
 - C. The satellite is in a Low Earth Orbit
 - D. The satellite uses Light Emitting Optics
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T8B11 (A)

Who may receive telemetry from a space station?

- A. Anyone who can receive the telemetry signal
 - B. A licensed radio amateur with a transmitter equipped for interrogating the satellite
 - C. A licensed radio amateur who has been certified by the protocol developer
 - D. A licensed radio amateur who has registered for an access code from AMSAT
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T8B12 (C)

Which of the following is a good way to judge whether your uplink power is neither too low nor too high?

- A. Check your signal strength report in the telemetry data
 - B. Listen for distortion on your downlink signal
 - C. Your signal strength on the downlink should be about the same as the beacon
 - D. All of these choices are correct
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T8C - Operating activities: radio direction finding; radio control; contests; linking over the internet; grid locators

T8C01 (C)

Which of the following methods is used to locate sources of noise interference or jamming?

- A. Echolocation
- B. Doppler radar
- C. Radio direction finding
- D. Phase locking

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T8C02 (B)

Which of these items would be useful for a hidden transmitter hunt?

- A. Calibrated SWR meter
- B. A directional antenna
- C. A calibrated noise bridge
- D. All of these choices are correct

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T8C03 (A)

What operating activity involves contacting as many stations as possible during a specified period?

- A. Contesting
- B. Net operations
- C. Public service events
- D. Simulated emergency exercises

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T8C04 (C)

Which of the following is good procedure when contacting another station in a radio contest?

- A. Sign only the last two letters of your call if there are many other stations calling
- B. Contact the station twice to be sure that you are in his log
- C. Send only the minimum information needed for proper identification and the contest exchange
- D. All of these choices are correct

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T8C05 (A)

What is a grid locator?

- A. A letter-number designator assigned to a geographic location
- B. A letter-number designator assigned to an azimuth and elevation
- C. An instrument for neutralizing a final amplifier
- D. An instrument for radio direction finding

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T8C06 (B)

How is access to some IRLP nodes accomplished?

- A. By obtaining a password that is sent via voice to the node
- B. By using DTMF signals
- C. By entering the proper internet password
- D. By using CTCSS tone codes

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T8C07 (D)

What is meant by Voice Over Internet Protocol (VoIP) as used in amateur radio?

- A. A set of rules specifying how to identify your station when linked over the internet to another station
- B. A set of guidelines for contacting DX stations during contests using internet access
- C. A technique for measuring the modulation quality of a transmitter using remote sites monitored via the internet
- D. A method of delivering voice communications over the internet using digital techniques

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T8C08 (A)

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 (VoIP)
- B. A system for providing access to websites via amateur radio
- C. A system for informing amateurs in real time of the frequency of active DX stations
- D. A technique for measuring signal strength of an amateur transmitter via the internet

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T8C09 (D)

How might you obtain a list of active nodes that use VoIP?

- A. By subscribing to an on line service
- B. From on line repeater lists maintained by the local repeater frequency coordinator
- C. From a repeater directory
- D. All of these choices are correct

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T8C10 (D)

What must be done before you may use the EchoLink system to communicate using a repeater?

- A. You must complete the required EchoLink training
- B. You must have purchased a license to use the EchoLink software
- C. You must be sponsored by a current EchoLink user
- D. You must register your call sign and provide proof of license

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T8C11 (A)

What name is given to an amateur radio station that is used to connect other amateur stations to the internet?

- A. A gateway
- B. A repeater
- C. A digipeater
- D. A beacon

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T8D - Non-voice and digital communications: image signals; digital modes; CW; packet radio; PSK31; APRS; error detection and correction; NTSC; amateur radio networking; Digital Mobile/Migration Radio

T8D01 (D)

Which of the following is a digital communications mode?

- A. Packet radio

- B. IEEE 802.11
 - C. JT65
 - D. All of these choices are correct
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T8D02 (A)

What does the term "APRS" mean?

- A. Automatic Packet Reporting System
 - B. Associated Public Radio Station
 - C. Auto Planning Radio Set-up
 - D. Advanced Polar Radio System
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T8D03 (D)

Which of the following devices is used to provide data to the transmitter when sending automatic position reports from a mobile amateur radio station?

- A. The vehicle speedometer
 - B. A WWV receiver
 - C. A connection to a broadcast FM sub-carrier receiver
 - D. A Global Positioning System receiver
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T8D04 (C)

What type of transmission is indicated by the term "NTSC?"

- A. A Normal Transmission mode in Static Circuit
 - B. A special mode for earth satellite uplink
 - C. An analog fast scan color TV signal
 - D. A frame compression scheme for TV signals
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T8D05 (A)

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
 - B. Showing automatically the number of packets transmitted via PACTOR during a specific time interval
 - C. Providing voice over internet connection between repeaters
 - D. Providing information on the number of stations signed into a repeater
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T8D06 (B)

What does the abbreviation "PSK" mean?

- A. Pulse Shift Keying
 - B. Phase Shift Keying
 - C. Packet Short Keying
 - D. Phased Slide Keying
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T8D07 (A)

Which of the following best describes DMR (Digital Mobile Radio)?

- A. A technique for time-multiplexing two digital voice signals on a single 12.5 kHz repeater channel
- B. An automatic position tracking mode for FM mobiles communicating through repeaters
- C. An automatic computer logging technique for hands-off logging when communicating while operating a vehicle
- D. A digital technique for transmitting on two repeater inputs simultaneously for automatic error correction

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T8D08 (D)

Which of the following may be included in packet transmissions?

- A. A check sum that permits error detection
- B. A header that 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

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T8D09 (C)

What code is used when sending CW in the amateur bands?

- A. Baudot
- B. Hamming
- C. International Morse
- D. All of these choices are correct

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T8D10 (D)

Which of the following operating activities is supported by digital mode software in the WSJT suite?

- A. Moonbounce or Earth-Moon-Earth
- B. Weak-signal propagation beacons
- C. Meteor scatter
- D. All of these choices are correct

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T8D11 (C)

What is an ARQ transmission system?

- A. A special transmission format limited to video signals
- B. A system used to encrypt command signals to an amateur radio satellite
- C. A digital scheme whereby the receiving station detects errors and sends a request to the sending station to retransmit the information
- D. A method of compressing the data in a message so more information can be sent in a shorter time

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T8D12 (A)

Which of the following best describes Broadband-Hamnet(TM), also referred to as a high-speed multi-media network?

- A. An amateur-radio-based data network using commercial Wi-Fi gear with modified firmware
- B. A wide-bandwidth digital voice mode employing DRM protocols
- C. A satellite communications network using modified commercial satellite TV hardware
- D. An internet linking protocol used to network repeaters

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T8D13 (B)

What is FT8?

- A. A wideband FM voice mode
- B. A digital mode capable of operating in low signal-to-noise conditions that transmits on 15-second intervals
- C. An eight channel multiplex mode for FM repeaters
- D. A digital slow scan TV mode with forward error correction and automatic color compensation

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T8D14 (C)

What is an electronic keyer?

- A. A device for switching antennas from transmit to receive
- B. A device for voice activated switching from receive to transmit
- C. A device that assists in manual sending of Morse code
- D. An interlock to prevent unauthorized use of a radio

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