

Technician Licensing Class

Your Computer Goes Ham Digital!

Presented by



Amateur Radio Technician Class Element 2 Course Presentation

➤ **ELEMENT 2 SUB-ELEMENTS** (Groupings)

- **About Ham Radio**
- **Call Signs**
- **Control**
- **Mind the Rules**
- **Tech Frequencies**
- **Your First Radio**
- **Going On The Air!**
- **Repeaters**
- **Emergency!**
- **Weak Signal Propagation**

Amateur Radio Technician Class Element 2 Course Presentation

➤ **ELEMENT 2 SUB-ELEMENTS** (Groupings)

- **Talk to Outer Space!**
- **Your Computer Goes Ham Digital!**
- **Multi-Mode Radio Excitement**
- **Run Some Interference Protection**
- **Electrons - Go With the Flow!**
- **It's the Law, per Mr. Ohm!**
- **Go Picture These!**
- **Antennas**
- **Feed Me with Some Good Coax!**
- **Safety First!**

Your Computer Goes Ham Digital!

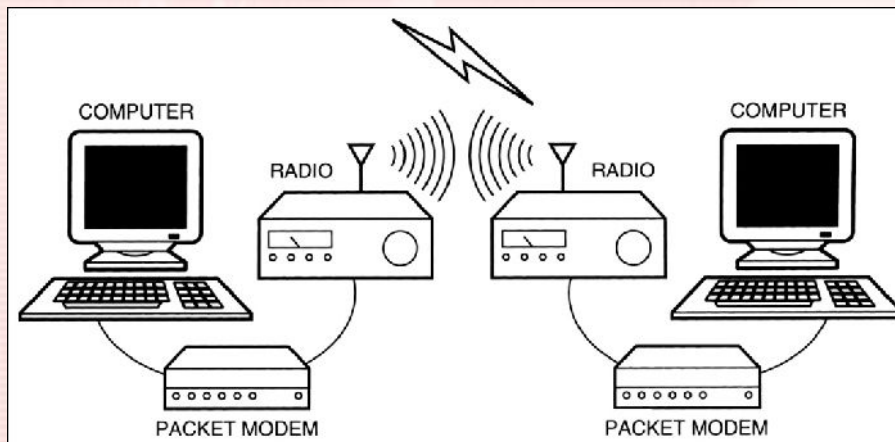
- T8D9 The code used when sending CW in the amateur bands is International Morse.
- T8D10 The following devices can be used to transmit CW in the amateur bands:
 - Straight Key
 - Electronic Keyer
 - Computer Keyboard
- T8D1 The following are examples of digital communications methods.
 - Packet
 - PSK31
 - MFSK

All of these choices are correct.

All of these choices are correct.

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- T4A6 A terminal node controller would be connected between a transceiver and computer in a packet radio station.



A Packet Radio System.



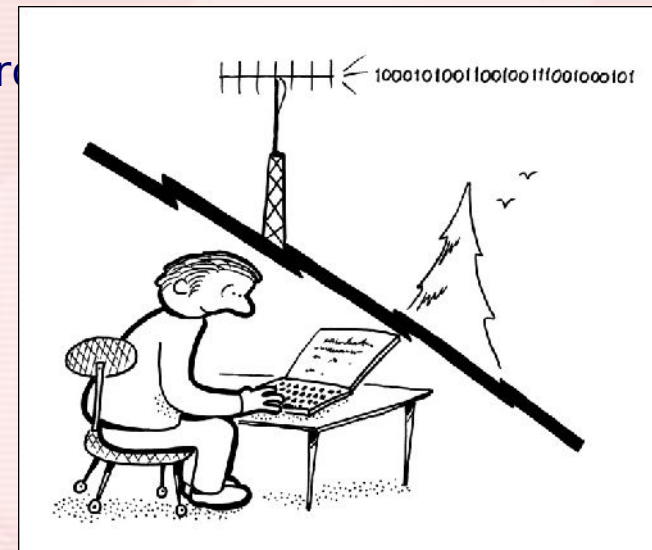
Some Packet equipment

Your Computer Goes Ham Digital!

- T4A7 The sound card provides audio to the microphone input and converts received audio to digital form when conducting digital communications using a computer.
- T8D8 Packet transmissions may include:
 - A check sum which permits error detection;
 - A header which contains the call sign of the station to which the information is being sent;
 - Automatic repeat request in case of error

All of these choices are correct.

Laptop, TNC, and Handheld comprise Packet Station.



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- T8D11 A "parity" bit is an extra code element used to detect errors in received data.
 - Just like a 'parity bit' in computers
- T7B12 When applied to digital communications systems, the acronym "BER" means **Bit Error Rate**.
- T3A10 Error rates are likely to increase on VHF or UHF data signals propagated over multiple paths.
- T8B11 A commonly used method of sending signals to and from a digital satellite is FM Packet.
 - FM packet a very popular digital communications system
 - Packets usually stored and forwarded, via satellite or space station

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- T8D2 The term APRS means **A**utomatic **P**osition **R**eporting **S**ystem



Kenwood dual bander plugged into the Avmap G5 GPS position plotter.

Your Computer Goes Ham Digital!

- T8D3 A **G**lobal **P**ositioning **S**ystem receiver is normally used when sending automatic location reports via amateur radio.
- T8D6 The abbreviation PSK mean **P**hase **S**hift **K**eying.
- T8D7 PSK31 is a low-rate data transmission mode.
 - PSK-31 transmission rate is about normal typing speed.
 - PSK is a remarkable digital mode that slices through interference and gets message across sometimes to the moon and back.



You can connect a PSK-31 and RTTY data reader to your radio to decode messages

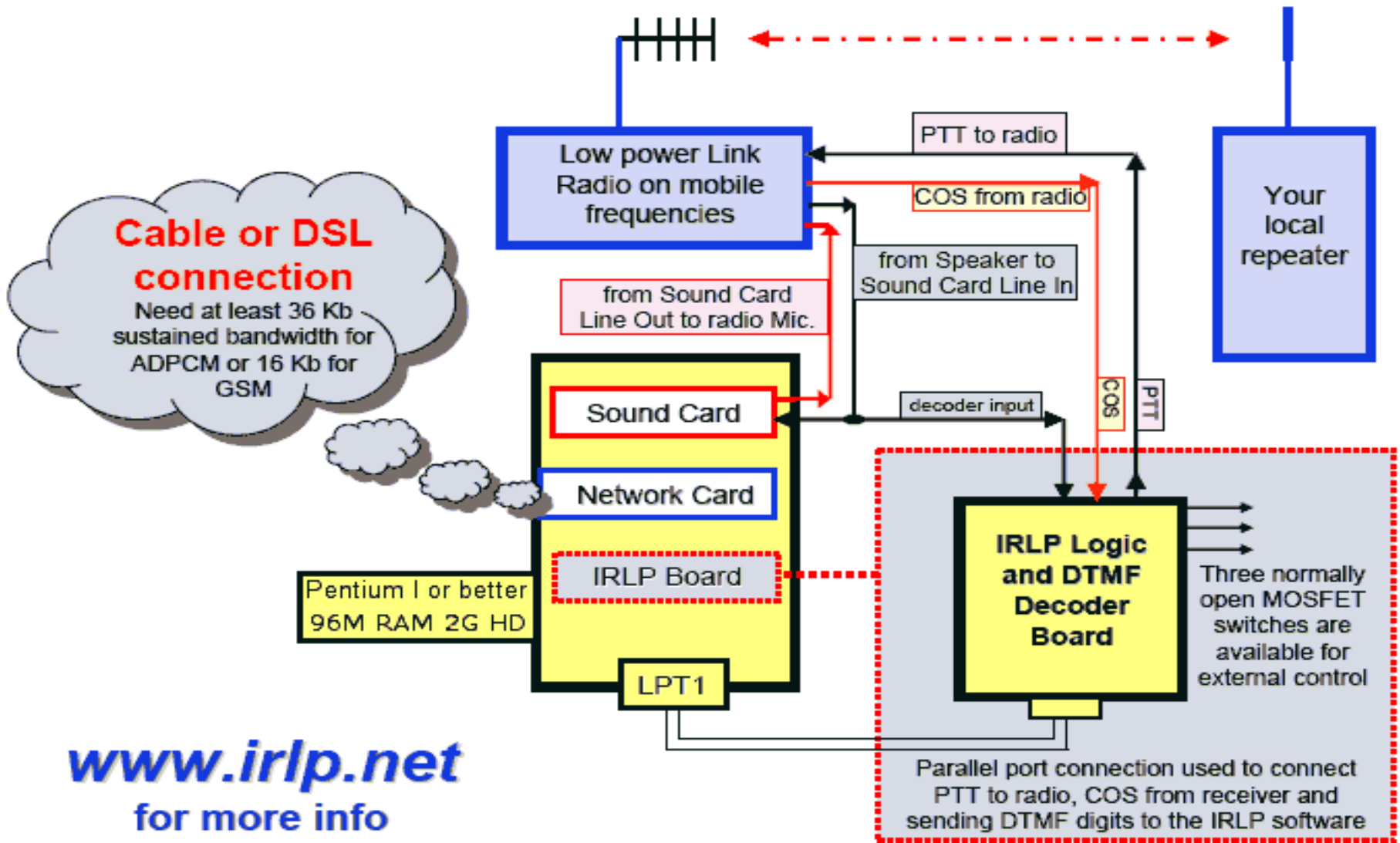
Your Computer Goes Ham Digital!

- T8C11 A gateway is the name given to an amateur radio station that is used to connect other amateur stations to the Internet.
 - Similar to a Gateway in connection to a computer network
- T8C9 You might obtain a list of active nodes that use VoIP from a repeater directory.
 - The Internet is your best source. (But this is the question for the exam.)
- T8C10 You can select a specific IRLP node when using a portable transceiver by use of the keypad to transmit the IRLP node ID.

Keypad on this rig's top corner and on back of microphone. (Not necessarily this way on all rigs.)

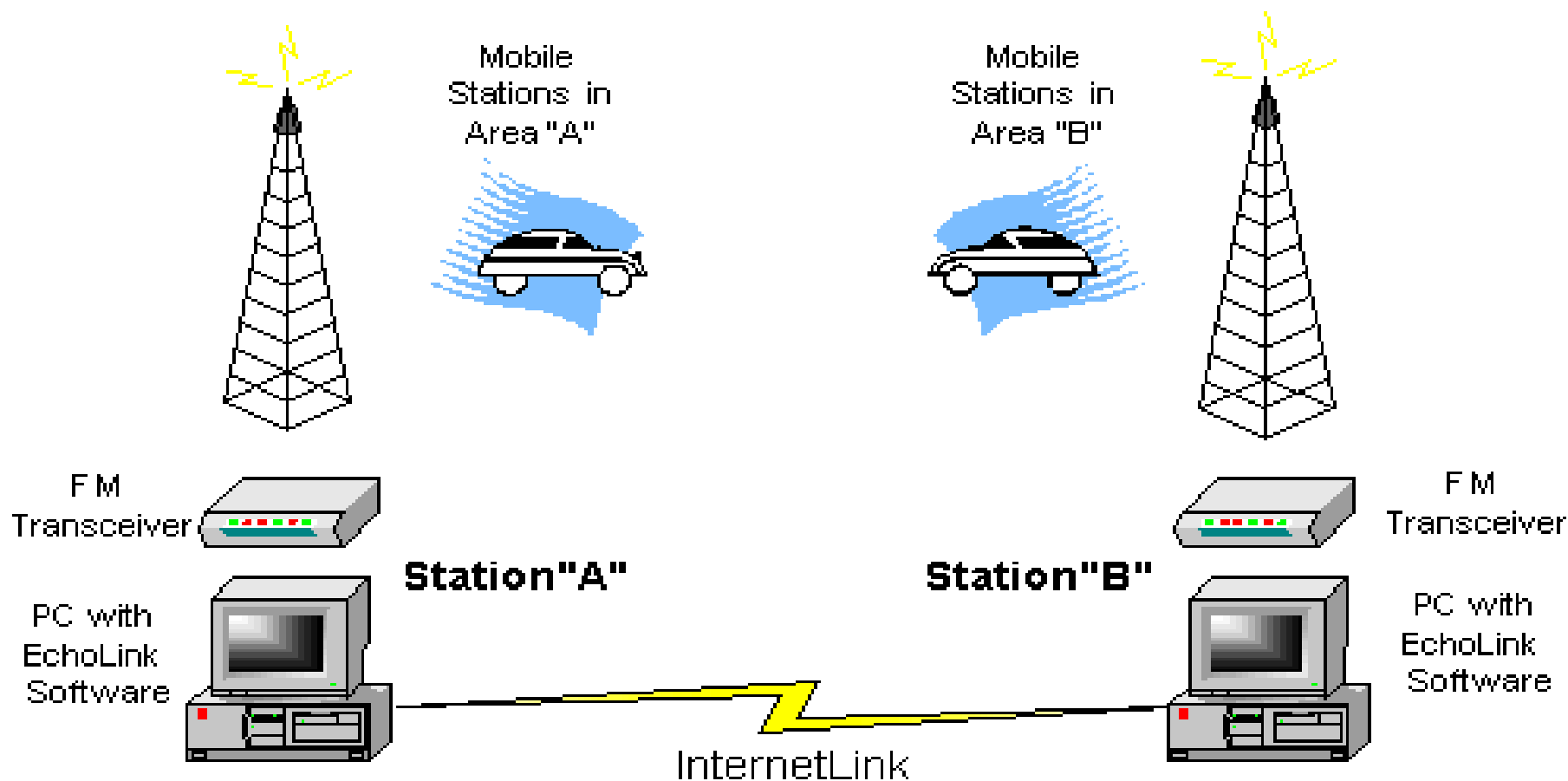


Your Computer Goes Ham Digital!



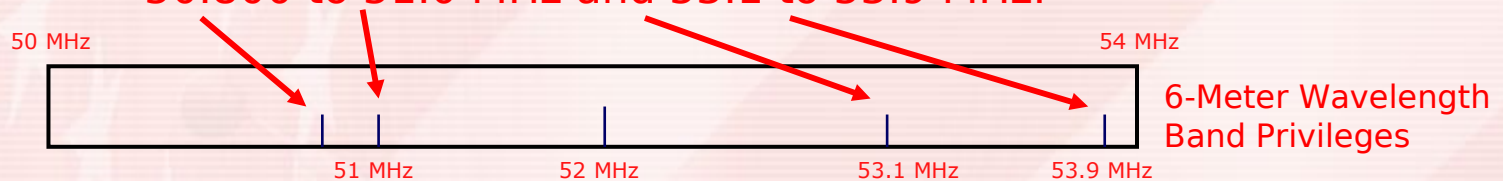
Your Computer Goes Ham Digital!

Linking Example



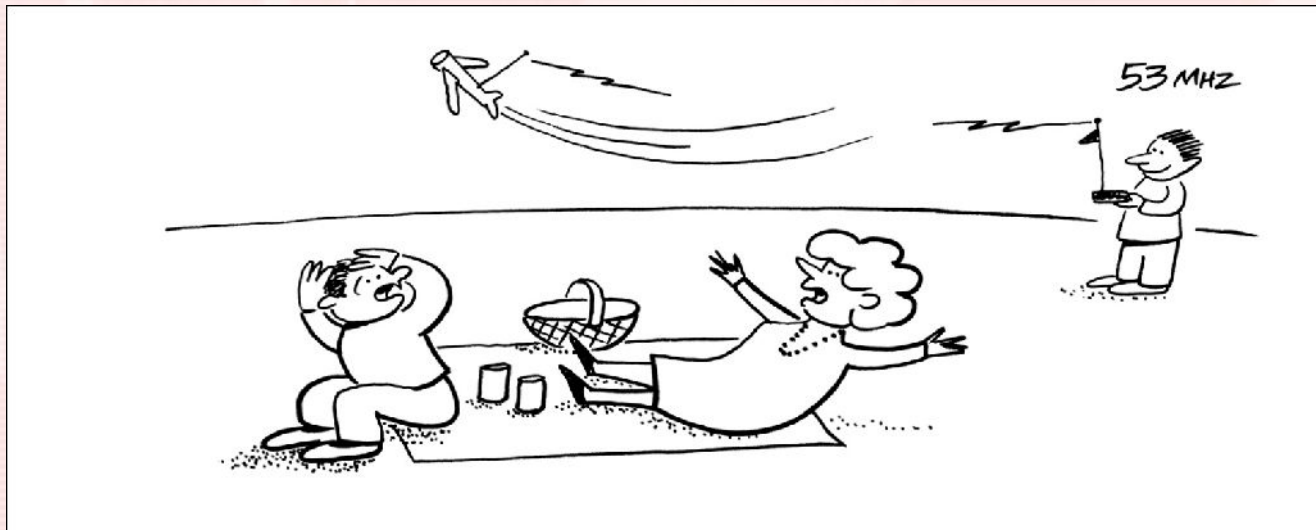
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- T8C8 It is required that a label indicating the licensee's name, call sign and address must be affixed to the transmitter in place of on-air station identification when sending signals to a radio control model using amateur frequencies.
 - Strange radio control signals can be heard using RC:
 - 50.800 to 51.0 MHz and 53.1 to 53.9 MHz.



Your Computer Goes Ham Digital!

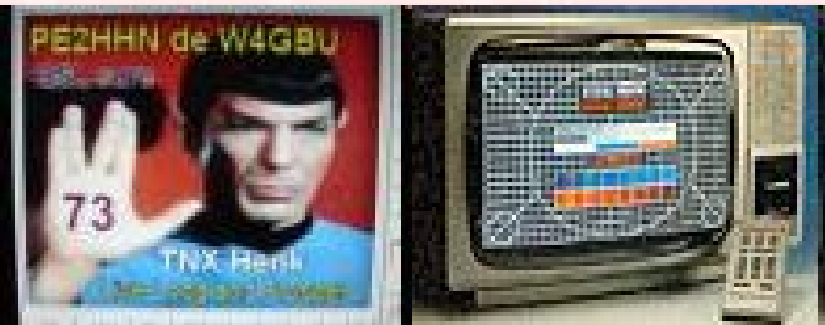
- T8C7 The maximum power allowed when transmitting telecommand signals to radio controlled models is 1 watt.
 - Telecommand signals are unidentified commands permitted by rule.



Hams can use frequencies on the 6-Meter Band to radio control a model aircraft.

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- T8D4 The type of transmission indicated by the term NTSC is an analog fast scan color TV signal.



When you're ready, you can add the fun of ATV to your ham shack.

Element 2 Technician Class Question Pool

Your Computer Goes Ham Digital

Valid July 1, 2010

Through

June 30, 2014



T8D09 What code is used when sending
CW in the amateur bands?

- A.** Baudot
- B.** Hamming
- C.** International Morse
- D.** Gray

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

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

and
station?

connected between a transceiver
computer in a packet radio

- A. Transmatch
- B. Mixer
- C. Terminal node controller
- D. Antenna

T4A07 How is the computer's sound card used when conducting digital communications using a computer?

- A.** The sound card communicates between the computer CPU and the video display
- B.** The sound card records the audio frequency for video display
- C.** The sound card provides audio to the microphone input and converts received audio to digital form
- D.** All of these choices are correct

T8D08
in

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

18D11 What is a "parity" bit?

- A. A control code required for automatic position reporting
- B. A timing bit used to ensure equal sharing of a frequency
- C. An extra code element used to detect errors in received data
- D. A "triple width" bit used to signal the end of a character

17B12 What does the acronym "BER" mean when applied to digital communications systems?

- A. Baud Enhancement Recovery
- B. Baud Error Removal
- C. Bit Error Rate
- D. Bit Exponent Resource

T3A10 signals

What may occur if VHF or UHF data propagate over multiple paths?

- A. Transmission rates can be increased by a factor equal to the number of separate paths observed
- B. Transmission rates must be decreased by a factor equal to the number of separate paths observed
- C. No significant changes will occur if the signals are transmitting using FM
- D. Error rates are likely to increase

T8B11
satellite?

What is a commonly used method of sending signals to and from a digital

- A.** USB AFSK
- B.** PSK31
- C.** FM Packet
- D.** WSJT

- A. Automatic Position Reporting System
- B. Associated Public Radio Station
- C. Auto Planning Radio Set-up
- D. Advanced Polar Radio System

T8D03

reports

Which of the following is normally used when sending automatic location reports via amateur radio?

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

T8D06 What does the abbreviation PSK mean?

- A.** Pulse Shift Keying
- B.** Phase Shift Keying
- C.** Packet Short Keying
- D.** Phased Slide Keying

T8D07 What is PSK31?

- A. A high-rate data transmission mode
- B. A method of reducing noise interference to FM signals
- C. A method of compressing digital television signal
- D. A low-rate data transmission mode

T8C11
radio

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

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

T8C09
nodes

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

- A. From the FCC Rulebook
- B. From your local emergency coordinator
- C. From a repeater directory
- D. From the local repeater frequency coordinator

T8C10 How do you select a specific IRLP node when using a portable transceiver?

- A.** Choose a specific CTCSS tone
- B.** Choose the correct DSC tone
- C.** Access the repeater autopatch
- D.** Use the keypad to transmit the IRLP node ID

What is required in place of on-air station identification when sending signals to a radio control model using amateur frequencies?

- A. Voice identification must be transmitted every 10 minutes
- B. Morse code ID must be sent once per hour
- C. A label indicating the licensee's name, call sign and address must be affixed to the transmitter
- D. A flag must be affixed to the transmitter antenna with the station call sign in 1 inch high letters or larger

T8C07

when
radio

What is the maximum power allowed transmitting telecommand signals to controlled models?

- A.** 500 milliwatts
- B.** 1 watt
- C.** 25 watts
- D.** 1500 watts

T8D04 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