

RADIO CLASS A

1. Explain what radio is.

Radio is the technology of signaling and communicating using radio waves. Radio waves are electromagnetic waves of frequency between 30 hertz (cycles per second) and 300 gigs hertz.

Radio is a way to electronically communicate without wires. Radio sends information from one location to another location using electromagnetic waves. The information could be Morse code, your voice, music, or data. Electromagnetic waves are created when we get an electrical circuit to vibrate electrons back and forth thousands or millions a time per second. (Music is not allowed on ham frequencies.)

Then discuss the following:

- a. The differences between broadcast radio and hobby radio.

Broadcast radio is one-way radio, meant for commercial purposes. Hobby radio is non-commercial two-way radio used to transmit a message to another radio. Hobby radio, which is referred to as Personal Radio Service by the Federal Communications Commission (FCC), includes Citizens Band Radio Service (CB), General Mobile Radio Service (GMRS), Family Radio Service (FRS), Multi-Use Radio Service (MURS) and Amateur (ham) Radio Service.

You probably already know broadcast radio, but radar, wireless networks, remote car locks, cell phones, microwave ovens, communications satellites, television, satellite navigation systems, EZ-Pass toll systems and those security tags in stores are all radio too!

- b. The differences between broadcasting and two-way communications.

Broadcasting is a one way transmission to many receivers at the same time such as a local music station or television station. Two way communications are back and forth conversations between two stations. Both stations then take turns transmitting and receiving.

Two-way radio is used by police, fire, ambulances, planes, trains, ships, astronauts.

- c. Radio call signs and how they are used in broadcast radio and amateur radio.

All radio transmitters must use call signs to prove they have been licensed. Amateur Radio call signs are like, KF5FWK or W5KY, with a number in them.

The items below are optional.

A general aviation tail number generally begin with the letter N and is their FCC call sign.

Generally the call sign of a commercial radio or TV station east of the Mississippi river begins with the letter W and west of the Mississippi river begins with the letter K.

Sometimes the commercial call sign have a meaning but not always obvious. TV channel 11 KTVT is "Television for Texas." TV channel 21 KTXA is "Texas." TV channel 13 KERA is "A new ERA in broadcasting." FM Radio station 88.5 KEOM is "Education of Mesquite."

- d. The phonetic alphabet and how it is used to communicate clearly.

Because some letters such as "C" and "E" might sound alike when transmissions are noisy, standard Phonetic Alphabet words are often used to make things understood.

The standard phonetics are in the attachment.

For example, you might say "My name is John, It is spelled Juliet Oscar Hotel November."

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2. Do the following:

- a. Sketch a diagram showing how radio waves travel locally and around the world.

Locally: Radio waves travel in line-of-sight and slowly dissipate. Higher frequencies dissipate faster.
Globally: Radio waves bounce off the atmosphere and off the ground repeatedly until they circle the globe.

- b. Explain how the broadcast radio stations, WWV and WWVH can be used to help determine what you will hear when you listen to a shortwave radio?

They also provide information on how well the Ionosphere is bouncing radio signals today. They also can be used to set your clock, to calibrate your receiver and transmitter, and to see how well radio signals can travel to and from Colorado and Hawaii.

- c. Explain the difference between a distant (DX) and a local station.

DX

DX stands for Distance. Usually a DX station is in another country though sometimes it can be another state.

Local

A local station is usually within 100 miles of you.

- d. Discuss what the Federal Communication Commission (FCC) does and how it is different from the International Telecommunication Union.

FCC, NTIA, ITU:

The Federal Communications Commission (FCC) is a United States government agency that control licensing of non-government transmitters. Non-government transmitters would be places like Radio & TV transmitters, Trains, Planes, Airplanes, Boats, Amateur transmitters, and others.

The National Telecommunications and Information Administration (NTIA) control licensing of government agencies like the FBI and US military.

The International Telecommunications Union (ITU) is a United Nations agency that establishes international standards for radio.

All three agencies also regulate transmitters in space.