Gordon West's Pre-Study Q&A for the 2014-18 Technician Class Course

Welcome to your weekend class pre-study homework. Your upcoming weekend class is absolutely NOT a cram session, followed by the test. Rather your weekend course will take your textbook questions and answers and relate them to the real world of ham radio operating.

This pre-study material comes straight out of the Gordon West ***Technician Class*** book for the 2014 through 2018 Element 2 question pool, and his Audio Theory Course. The fill-in-the-blank questions in this pre-study guide follow the exact order of the book. We even give you page numbers to quickly spot the correct answer!

In addition to the Gordon West ***Technician Class*** book, this pre-study material is covered in the exclusive audio CD course. The CD audio course is a fun way to hear the radio sounds behind some of these questions.

This pre-study homework is fill-in-the blank. Your actual Element 2 written examination will be a multiple choice exam – all the easier.

This fill-in-the blank homework also parallels the computer home study course. Taking sample exams on the computer is fun, educational, and a double-check that you will do well on the upcoming written examination.

Begin reading over your ***Technician Class*** book, and start filling in the home study answers. The page numbers will help! Be sure to bring your completed home study to the first class session.

To order the Gordon West ***Technician Class*** book, or his Audio Theory Course go to
www.w5yi.org
or call 1-800-669-9594

GETTING INTO HAM RADIO (book pgs. 1–4; CD #1, Track 1)

1. How many hams worldwide? _____
2. How many hams in the USA? _____
3. How many questions on your upcoming Technician Class test? _____
4. How many bands will your new handheld radio have? _____
5. What does ATV stand for? _____
6. Ham radio is a hobby and _____.
7. American Radio Relay League website: _____
8. Will a CB antenna work on 10 meters ham? _____
9. Ham radio, a hobby, and also a? _____
10. A fellow ham to show you the ropes? _____
11. Ham Radio's national association? _____

TECHNICIAN CLASS PRIVILEGES (book pgs. 5-20; CD #1, Track 1)

1. Frequency range for HF? _____
2. Frequency range for VHF? _____
3. Frequency range for UHF? _____
4. You have voice privileges on this worldwide HF worldwide band._____
5. Six meters, work the moon? _____ MHz
6. Two meters, the most popular band _____ MHz
7. How many meters is the 222 MHz band? _____
8. The 70 cm band is very popular! _____ MHz
9. What two bands in a dual band hand held? _____
10. CW – only privileges on these three bands? _____
11. Do this when you receive your call letters: Get on the _____ !

12. Technician privileges include _____bands for HF operation?

13. Voice band for Technician HF sky waves? _____

14. Technician Class power output on 10 meters? _____

15. Ten meter HF voice privileges? _____

16. Four worldwide bands for Technician Class Morse code? _____

17. _____cm for 902 – 928 MHz?

18. _____cm for the 1240 - 1300 MHz?

19. This chapter for learning the Morse code? _____ Page?_____

A LITTLE HAM HISTORY (book pgs. 21-26)

1. Ham radio has been around for _____years.

2. First ham license issued around _____.

3. What requirement has been totally eliminated from the ham radio test? _____

4. When did the FCC restructure the Amateur service? _____

5. When did self-testing ham exams begin? _____

6. How many grades of ham radio licenses? _____

7. How many examiners to give you the Element 2 exam? _____

8. Can you jump over the entry level Tech test and go direct to the General Class test?____

9. Exam element number for Technician Class? _____

10. Exam element number for General Class? _____

11. Exam element number for Extra Class? _____

GETTING READY FOR THE EXAM (book pgs. 27-32; CD #1, Track 1)

1. How many test questions for Technician? _____

2. How many questions in the total Technician Question pool? _____

3. May the test wording be changed or modified? _____

4. Passing score? _____%

5. How many questions could you miss and still pass? _____

6. You receive this paper when you pass? _____

7. The questions on the CDs and in the book have been _____

   for faster and smarter learning.

8. What color are key words to study before the test? _____

9. Got a question? Call Gordo at this number: _____

10. How many exam questions on Rules? _____

11. How many exam questions on math? _____

12. How many exam questions on antennas and feedlines? _____

13. Can exam questions be reworded? _____

14. May numerical values in questions be changed on your test? _____

ABOUT HAM RADIO & CALL SIGNS (book pgs. 33-50; CD #1, Track 2)

1. Minimum age for a ham radio license? _____

2. Who regulates and enforces the ham service? _____

3. Licenses are issued for _____years.

4. Grace period for an expired license? _____

5. Give your call sign every _____minutes.

6. Phonetic alphabet for H I ?_____

7. Which language to identify your call sign? _____

8. Which ITU region are we in? _____

9. May we send third party traffic to Haiti? _____

10. Country call sign prefix for United Kingdom? _____

11. Does the US have reciprocal operating agreements with The Netherlands? _____

12. May you continue to transmit on an expired license? _____

13. Call signs in the United States begin with one of these 4 letters? _____

14. Another name for your amateur radio apparatus? _____

15. Maximum power allowed to radio control a "quad-copter"? _____

16. Call sign type with a single letter in prefix and suffix? (K7A) _____

17. Required club members for a club station license? _____

18. Which call sign area for a license in Florida? _____

19. A call sign type when identifying as "Race Headquarters?"_____

20. Who regulates ham radios aboard a US documented vessel on the high seas?

_____

CONTROL (book pgs. 51-56; CD #1, Track 3)

1. Every transmitting station needs a _____operator.

2. What type of control when using a handheld radio? _____

3. Mountaintop repeaters normally operate _____control.

4. May a Technician control op transmit on General Class frequencies? _____

5. When may a control operator be "on the clock" while transmitting? _____

6. May a non-ham be designated as a control operator? _____

7. What type of control when operating your handheld radio? _____

8. What type of control for APRS? _____

MIND THE RULES (book pgs. 57-62; CD #1, Track 4)

1. What part of the Rules covers ham radio? _____

2. Prohibited transmissions? _____

3. How much power should you transmit? _____

4. May intentional SECRET code be transmitted over ham radio? _____

5. Normally, music is _____?

6. When may the FCC inspect your station? _____

7. What might result if the FCC can't reach you by mail?
_____

8. Which Rules section covers ham radio? _____

9. How much power SHOULD a ham operator use? _____

10. This radio service is protected from ham radio interference under all circumstances?
_____

11. May we broadcast local city general news to the general public? _____

12. May we buy and sell ham radio gear on the air? _____

TECH FREQUENCIES (book pgs. 63-72; CD #1, Track 5)

1. What two letters stand for a radio emission? _____

2. Radio waves are considered _____.

3. Velocity of radio waves through free space? _____

4. Unit of radio frequency? _____

5. The abbreviation kHz stands for _____.

6. Frequency bands are usually called out in a _____.

7. Frequency and wavelength are inversely proportional. What is that magic number? ____

8. 52 megahertz is located in which meter band? _____

9. 28.4 MHz is located in which meter band? _____

10. 146.52 MHz is located on which meter band? _____

11. 223.5 MHz is located on which meter band?_____

12. 432 MHz is located on which meter band? _____

13. To go from METERS to MEGAHERTZ, or MEGAHERTZ to METERS the magic division number is _____.

14. 28.5 MHz is how many kilohertz? _____

15. Ten meter worldwide voice privileges extend from 28._____ to 28._____MHz.

16. Cycles per second? _____

17. Radio wave distance? _____

18. Frequency limits of the HF spectrum? _____

19. Frequency limits of the VHF spectrum? _____

20. VHF 2 meter national calling frequency? _____

21. UHF 70 cm national calling frequency? _____

22. Are band plans voluntary of FCC enforced? _____

YOUR FIRST RADIO (book pgs. 73-77; CD #2, Track 1)

1. Get your radio pre_____ by your local ham dealer or club.

2. Store favorite frequencies in your radio's _____.

3. Don't use a rubber duck inside your _____.

4. What type of modulation do we use for 2 meters and the 440 MHz band? _____

5. In noisy environments, hook this in to your handheld. _____

6. What is the advantage of SSB over FM when working satellites? _____

7. What device takes output on one band and produces output on another band? _____

8. The www for ham equipment reviews? _____

9. Abbreviation for mic transmit button? _____

10. Do rubber duck antennas all have the same connector? _____

11. Common emission for VHF Packet radio? _____

12. Common emission for VHF repeaters? _____

13. Bandwidth of a VHF repeater FM phone signal? _____

GOING SOLO (book pgs. 79-90; CD #2, Track 2)

1. Speak into your radio's _____.
2. Listen to radio audio on this _____.
3. Which circuit silences background white noise? _____
4. Transmitting on the same frequency is called _____.
5. We use duplex when transmitting when transmitting through a _____.
6. When you test over the air, always give this. _____
7. What does CQ mean? _____
8. Interference from another station on frequency is called by which Q code? _____
9. This Q code means change frequency. _____
10. Someone asks "What is your QTH?" _____
11. Your friend is going QRT. This means _____
12. The locator system based on 1 degree latitude by 2 degrees longitude? _____
13. UHF signals on 440 MHz sometimes take a _____ off nearby buildings.
14. Squelch does this to background noise? _____
15. Abbreviation for tone controlled squelch system? _____
16. Always give your _____when transmitting a test?
17. Before transmitting, always _____
18. Term for rapid fluttering signal from a mobile station? _____
19. Term for contacting as many stations as possible? _____

REPEATERS (book pgs. 91-97; CD #2, Track 3)

1. Repeaters transmit on their output and listen on their _____.
2. What is the term to describe transmitting on a repeater channel? _____plex.
3. What is the usual repeater offset for the 2 meter band? _____

4. What is the usual repeater offset for the 70 cm band? _____

5. Most repeaters also require CTCSS. What's this? _____

6. What else do you need to program in your handheld to access a local repeater? _____

7. Who maintains these free repeaters? _____

8. The difference between repeater transmit and receive frequencies is called?

   _____

9. Common difference between receive and transmit for repeaters on 2 meters?
   _____ 0.??? MHz

10. Common repeater offset for 70 cm band? _____MHz

11. Say **this,** instead of CQ, on repeaters to announce that you are monitoring?

    _____?

12. Repeaters usually give their call sign in? _____

EMERGENCY! (book pgs. 99-104; CD #2, Track 4)

1. Which communications have the highest priority? _____

2. What does RACES stand for? _____

3. What does ARES stand for? _____

4. What does the term "check" mean? _____

5. What words do we use to indicate an emergency on the 2 meter band? _____

6. What words to indicate an emergency on the 10 meter worldwide band? _____

7. What Morse Code characters are sent in an emergency? _____

8. Do this before transmitting on an emergency net? _____

9. When passing emergency traffic, pass the message exactly as?

   _____

10. Use this alphabet when spelling unusual words? _____

WEAK SIGNAL PROPAGATION (book pgs. 105-112; CD #3, Track 1)

1. What do we call radio signals that travel through space? _____

2. Use "Knife-edge" propagation to transmit over _____.

3. A warm air inversion creates this type of propagation. _____

4. Catch a falling star and try this? _____

5. How many layers of the Ionosphere during the day? _____

6. What layer disappears at night? _____

7. When can you get 10 meter propagation? Day or night? _____

8. Skip is not reflections, but rather, _____

9. Signals that hug the Earth are called _____waves.

10. Does the ionosphere ever effect common 2 meter and 70 cm repeater communications?

    _____

11. The ionosphere will regularly skip frequencies, during the day, on these bands?

    _____

12. Does sunspot activity influence the ionosphere? _____

13. "Short skip" signals normally refract off which layer of the ionosphere?

    _____

14. Long range skip is refracted by this layer of the ionosphere, at the peak of the solar cycle?

    _____

15. Which characteristic of a radio wave describes its polarization?

    _____

16. When would the ionosphere affect 2 meter and 70 cm handheld communication?

    _____

TALK TO OUTER SPACE! (book pgs. 113-118; CD #3, Track 2)

1. How many miles above the Earth to qualify as a space station? _____
2. What does LEO stand for? _____
3. Signals that contain information about an on board satellite computer? _____
4. What causes satellite signals to fade in and out? _____
5. Compensate for this shift when the satellite is approaching. _____
6. In the V/U mode, what band do you transmit on? _____
7. How much power should you use when transmitting to a satellite? _____
8. AMSAT's website to join them? _____
9. May a Technician Class operator talk with hams aboard the International Space Station?

   _____
10. _____ elements are input to a satellite tracking program? (starts with K)
11. A satellite will transmit this information on its? _____
12. Why are ham satellites slowly rotating in space? _____
13. What word describes a satellite's transmission of internal sensors?

    _____
14. What word describes how specific hams may control a satellite function?

    _____

YOUR COMPUTER GOES HAM DIGITAL! (book pgs. 119-126; CD #3, Track 3)

1. Is Morse Code a digital mode? _____
2. The device connected between your transceiver and computer? _____
3. What portion of your computer might decode digital signals? _____
4. What does CW stand for?_____

5. A _____ ham station connects other ham stations into the internet?

6. What does VoIP stand for? _____

7. What do IRLP and Echolink have in common? _____

8. Another name for fast scan television? _____

9. What does ARQ stand for? _____

10. Packet data signals may contain more _____when traveling over multiple or reflections?

11. What does GPS stand for? _____

12. What does PSK stand for? _____

13. Four letters that represent analog fast scan color ham television? _____

MULTI-MODE RADIO EXCITEMENT (book pgs. 127-135; CD #3, Track 4)

1. To operate satellite SSB, which emission mode? _____

2. What emission has the narrowest bandwidth? _____

3. We find a product detector in what type of radio receiver? _____

4. How wide is the SSB voice signal? _____

5. What does RIT stand for? _____

6. The ability of a receiver to hear signals close together? _____

7. How wide is fast scan television? _____

8. A fancy name for your new two-way radio? _____

9. The emission type for a handheld VHF/UHF radio? _____

10. For a base or mobile radio to transmit MORE modes than just FM, we call that radio? _____

11. Which popular voice mode is used for long range 10 meter contacts? _____

12. Can you access the 10 meter band with a common 2 meter.70 cm handheld or mobile radio? _____

13. Which has the narrowest bandwidth, FM or SSB? _____

14. What sideband do we use on 10 meters? _____

15. What word describes combining speech with an RF carrier signal?

_____

16. An SSB signal is about 3,000 Hertz narrow. How many kHz is 3,000 Hz?

_____???? kHz

17. Are all mobile and base station mic connectors wired the same way? _____

18. What word describes the ability of a receiver to detect weak signals?

_____

19. What word describes a receiver's ability to discriminate between multiple signals?

_____

20. Should automatic gain control be set to FAST or SLOW for SSB reception?

_____

RUN SOME INTERFERENCE PROTECTION (book pgs. 137-144; CD #3, Track 5)

1. On 10 meters, if your mic gain is too high, it could create this. _____
.
2. On 2 meters, speaking too softly will create under-_____.

3. A whistle on your handheld tied in to your car's 12 volts is likely from _____

4. What type of filter would you use to minimize harmonic emissions on your high frequency transmitter? _____-

5. When your neighbor spots that new antenna, tell them it is _____

6. What snap on device may minimize interference on audio equipment? _____

7. What might be causing your transmit radio frequency interfering with your neighbor's stereo network? _____

8. Using shielded wire will prevent _____of unwanted signals to and from the wire.

9. A small weather station transmitter falls under which part of the FCC Rules?

_____

ELECTRONS – *GO* WITH THE FLOW! (book pgs. 145-157; CD#4, Track 1)

1. The name for EMF? _____
2. The flow of electrons_____
3. The opposition to the flow of electrons_____
4. What device stores a chemical charge? _____
5. Most ham radios require _____volts for mobile operation.
6. Measure current with this _____.
7. _____ is measured in series, and _____is measured in parallel.
8. A good conductor_____
9. A good insulator_____
10. The amount of voltage that comes out of you home socket_____
11. A device that allows current to flow in only one direction_____
12. The unit of resistance_____
13. A variable resistance device_____
14. What device stores energy in a magnetic field? _____
15. Which device stores energy in an electric field?
16. The unit of capacitance? _____
17. A device that turns on or off a circuit? _____
18. A device that might amplify a signal? _____
19. FET stands for _____

20. Which battery chemistry is most dangerous with an overcharge?

_____

21. What are the two electrodes of a diode? _____

22. How is the cathode lead of a semiconductor diode usually identified?

_____

23. Opposition to AC current flow in a circuit is called? _____

24. What component can be used as an electronic switch or amplifier?

_____

25. What are the three electrodes of a PNP transistor? _____

26. What are the three electrodes of a field effect transistor? (FET)

_____

IT'S THE LAW, PER MR. OHM! (book pgs. 158-162; CD #4, Track 1)

1. Draw 2 different types of Ohm's Law Circles.

2. Power equals _____ X _____.

3. Voltage equals _____X _____.

4. If you are calculating current, it is Voltage divided by _____.

5. If you are calculating resistance, it is Voltage divided by _____.

6. In all of the problems, you are always dividing the larger number by the _____ number.

7. Could they ever substitute different numbers than what is in the book and on the audio course on your upcoming examination?_____

8. What voltage across a 2 Ohm resistor with 0.5 amps flowing through it?

_____

9. What is the current flowing through a 24 Ohm resistor connected across 240 volts?

_____

10. What is the resistance with 3 amps current flow through a resistor connected to 90 volts?

_____

PICTURE THIS! (book pgs. 163-174; CD#4, Track 2)

1. Draw the symbol for a resistor_____
2. Draw the symbol for a variable capacitor_____
3. Draw the symbol for an antenna_____
4. Draw a transistor symbol _____
5. Draw a chassis ground symbol _____
6. Draw a transformer symbol_____
7. Draw a diode symbol_____
8. Draw an LED symbol_____
9. Doubling your power output results in how much db gain? _____
10. A ten times increase in power will result in how much db gain? _____
11. What does LED stand for? _____
12. How many watts are 500 milliwatts? _____
13. A cold solder joint looks like this_____.
14. What will happen if you measure voltage with your multimeter on the resistance scale?
15. What do the 2 vertical lines represent in a transformer schematic?

    _____core
16. Another name for a switch controlled by an electromagnet? _____
17. How many GHz on a dial that reads out 2425 MHz? _____
18. How many MHz is 28,400 kHz? _____
19. How many microfarads are 1,000,000 picofarads? _____
20. A cold solder joint will look? _____

ANTENNAS (book pgs. 175-181; CD #4, Track 3)

1. What type of antenna is half wavelength, parallel to the Earth? _____
2. From tip to tip, how long is a half wave dipole for 10 meters? _____
3. Tip to tip, how long is a half wave dipole for 2 meters? _____
4. The electric field in a vertical antenna is _____to the Earth.
5. What is the formula for calculating the length of a half wave dipole, if you know the frequency in MHz? _____
6, Which antenna concentrates energy in just one direction? _____
7. What's a popular sport that uses handheld, directional antennas? _____
8. If your antenna and that of the other station are cross polarized, your signal will get ___?
9. With a dipole, where is the radiation strongest? _____
10. Your new dipole has best lowest SWR just below the band. Do this to the dipole ends? _____
11. Best place to mount a VHF or UHF mobile antenna for uniform radiation patterns? _____
12. Another name for that antenna coil on the base of your 10 meter mobile short whip? _____

FEED ME WITH SOME GOOD COAX! (book pgs. 183-192; CD #4, Track 4)

1. Coax cable is round or flat? _____
2. Impedance of coax cable for ham use? _____Ohms
3. Common coaxial cable connector for a mobile high frequency radio? _____
4. Common coaxial cable connector for a handheld radio? _____
5. Don't nick this_____
6. The larger the diameter of the cable, the lower the signal _____.
7. The ratio of forward power to reflected power is _____.

8. An SWR meter 4:1 means _____.

9. What device prevents signal radiation when testing your transmitter? _____

10. What is the coax connector called for your multimode radio? _____

11. Name a couple of antenna connector types for your handheld? _____

_____

12. What happens when moisture enters coax cable? _____

13. What happens to power lost in water-logged feedline? _____

14. What does a dummy load consist of? _____

SAFETY FIRST! (book pgs. 193-206; CD #4, Track 5)

1. Good way to guard against shock? _____

2. The green wire in an AC power cord provides what? _____

3. An intentional weak link in a wiring circuit_____

4. Should you replace a blown 10 amp fuse with a 40 amp fuse? _____

5. Precautions around a 12 volt lead acid battery? _____

6. Wear this when climbing an antenna tower_____

7. Make sure your antenna is well away from these_____

8. If on the ground looking up, always wear these to protect your eyes _____

9. Never climb a tower that has not been cranked _____

10. Use this for good RF grounding, not round wires_____

11. What is the device to help erect an antenna tower top section? _____

12. What frequency has the lowest MPE limit? _____meters.

13. A good place for a magnetic mobile antenna on your car_____

14. If you touch a transmitting antenna you could get_____

15. Below what power level are most radio signals considered safe? _____

16. Make sure your volt meter test lads are rated when measuring this type of voltage?

_____

17. What might happen if you short out a 12 volt storage battery?

_____

18. If time exposure to RF is measured at 6 minutes, what happens to RF exposure if the signal is only transmitting for half that time?

_____

19. To minimize over-exposure to RF transmit radio waves, always run

_____ amounts of transmit power.

PASSING THE EXAM (book pgs. 207-216; CD #4, Track 6)

1. What number to call to locate an exam site? _____
2. Typical exam cash cost? _____
3. Complete this NCVEC form_____
4. Always be sure to _____your paperwork.
5. What letters in your first call sign? _____
6. What number in your first call sign? _____
7. Trade in your first call sign for one with your initials under the _____ call sign program.
8. Its good to learn the code. What chapter covers learning Morse Code? _____
9. What page will help you locate a VEC examination coordinator? _____
10. What pages discuss RF safety and safe distances? _____
11. Pages _____ include the cross reference list showing Question Pool question numbers and book pages?

Bring this completed pre-study homework to class. Have your instructor help you with any UNANSWERED questions. If you have correctly completed more than 80% of these questions, give yourself an A for effort!

Congratulations on completing your pre-study assignment! If you were able to complete most of this homework, you'll do just fine on your upcoming Technician Class exam.

Be sure to send me your information, found on page 216, for your graduation certificate and manufacturer coupons and band charts. Please don't forget the stamps on the inside of a LARGE envelope. Let me know how well you did on the test.

Continue to review the book before class and before taking your exam. I look forward to hearing from you soon!

Gordon West, WB6NOA