



Technician Class Home-Study Q&A Course • Questions Valid 2018-2022

Gordon West, WB6NOA & The W5YI Group

Scroll Down To Begin The Home Study Q&A

Welcome to Ham Radio!

Your classroom instructor and I have some exciting training lined up for you, with lots of live-action amateur radio excitement ahead!

We really want you to have a successful study experience, as you prepare yourself for the FCC Technician Class written exam. When you pass, you'll receive your first amateur radio license and FCC call sign. By studying my yellow cover book [TECHNICIAN CLASS](#), and using this Home-Study material and the audio CD, you'll also be ready to get on the air!

I encourage you to get a head start on class with this home study course. Go through selected sections of the book with this course before each classroom session. These home study quizzes closely follow the book, and I even include page numbers to guide you to the correct answers!

If you are studying on your own, first play the audio CD inside the yellow book's front cover, and then begin working the book and this home study together. I then become YOUR personal instructor!

The questions in this pre-study are in a casual, fill-in-the-blanks format. Your actual Technician Class FCC Element 2 exam will be multiple choice exactly like the book, which makes it all that much easier! You will likely spot the test's correct answer in a nanosecond!

We list some of my additional training resources in the back of this booklet. You may obtain them from [The W5YI Group](#) and use them to help you prepare for your upcoming exam. Call during the day, 1-800-669-9594. Tell them you're working my home-study training materials.

So, open my [2018 Technician Class Book](#), play the included audio CD, and then begin this fun home-study course! Remember, play that CD first! I come with the book as your personal instructor via phone or E mail!

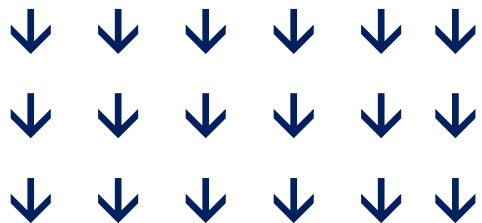
If you have any questions, or don't understand a concept, or simply want personal words of encouragement, feel free to call me at 714-549-5000 Monday -- Thursday, between 10 am and 4 pm California time, and let's talk ham radio! You can also email me for help at wb6noa@arrl.net.

Once again, welcome to Ham Radio!

Gordon "Gordo" West
WB6NOA

READY? SET? LET'S STUDY!

Scroll down below to begin the **Technician Class License Home Study Q&A.**



GETTING INTO HAM RADIO (Pages 1~4)

These won't be test questions, but file these "facts" in your grey matter to become a great HAM radio operator. No, we have no clue where the word HAM came from, so if YOU know, let ME know! So take out your trusty pen or pencil, and write in on these lines what YOU think is the correct answer!

1. How many ham radio operators are there in the world? _____ p. 1
2. How many ham operators in the USA? _____ p. 1
3. Which organization will issue your USA amateur radio license? _____ p. 1
4. How many questions will be on your upcoming Technician Class exam? _____ p. 1
5. Popular choice for a new handheld radio has how many bands? _____ p. 2
6. Could you use a CB antenna on 10 meters? _____ p. 3
7. You can bounce a signal off this object in outer space! _____ p. 3
8. Ham radio live color TV is called? _____ p. 3
9. Ham radio is a hobby, but most important, ham radio is a _____ p. 4
10. A fellow ham to show you the ropes is called a what? _____ p. 4
11. We hope you will join this organization: _____ p. 4

I also include their sign up page in our book, page 241. Yes, you can join the ARRL before you receive your new call sign!

TECHNICIAN CLASS PRIVILEGES (Pages 5~20)

Nope, you don't need to memorize all this fun stuff here, but give it a read to better understand where our radio bands are located on the big radio dial!

1. How fast do radio waves travel? Approximately _____ p. 5
2. What is the frequency range for High Frequency? _____ p. 6
3. What is the frequency range for VHF? _____ p. 6
4. What is the frequency range for UHF? _____ p. 6
5. You have long-range sky wave privileges on these HF bands? _____ p. 8
6. What is the 6 meter domestic SSB calling frequency? _____ p. 9

7. What are the upper and lower frequency limits on 2 meters? _____ p. 10
8. What is the wavelength of the 222 MHz band? _____ p. 11
9. What are the frequency limits on the 70 cm band? _____ p. 12
10. What are the frequency limits of ATV Channel 2, 23 cm band? _____ p. 13
11. What are the 4 High Frequency Technician Class bands? _____ p. 14
12. What is another name for CW? _____ p. 14
13. In addition to Morse code, 10 meter privileges include long range _____ p. 15
14. What is the frequency range of voice privileges on 10 meters? _____ p. 16
15. The free CD that comes with the book, play it _____ p. 17
16. Above what frequency are ham bands shared with other services? _____ p. 18
17. Ask your exam team how to join a local _____ p. 19
18. Soon, we hope, technician class operators will gain added long range _____ p. 20

A LITTLE HAM HISTORY (Pages 21~26)

Here is where it all began! From wires to WIRELESS, ham radio takes to the airwaves last century! Nothing to memorize here, but fun reading on our 100 + year history! Good stuff to KNOW on the latest rules and regs for our service! Fill in the blanks here!

1. Ham radio promotes international _____ p. 21
2. When did ham radio licensing begin? _____ p. 22
3. What test requirement has been eliminated for a ham radio license? _____ p. 22
4. When did volunteer examiners take over administering ham exams? _____ p. 23
5. What are the 3 grades of current ham radio licenses? _____ p. 24
6. Can you jump over Technician to go direct to General without the tech test? _____ p. 24
7. How many examiners are required to give ham radio exams? _____ p. 25
8. Which Exam Element for the Technician Class exam? _____ p. 25
9. Which application form will you complete at the exam site? _____ p. 25

10. Long expired licenses may be earned back by passing the technician exam? _____ p. 26
11. Call this number for old-license information for grandfather information: 1-800_____p.26

GETTING READY FOR THE EXAM (Pages 27~32)

OK, here is the good stuff. None of this on the actual test, but here is what you DO need to know to get prepared for the Technician Class element 2 exam!

1. How many questions on the Technician Class exam? _____ p. 27
2. How many total questions in the Technician Class question pool? _____ p. 27
3. What is the passing grade for the Element 2 exam? _____ p. 27
4. How often are question pools for each element revised? Every _____ p. 27
5. May the question wording be changed or modified? _____ p. 28
6. How many questions can you get from Sub element T1 Rules? _____ Table 4-1, p. 28
7. In this book, the total question pool has been logically _____ p. 30
8. What color are the key words to study before the exam? _____ p. 31
9. The complete cross reference list of Q&As is found on which pages? _____ p. 31
10. Our rearrangement of Q&As begins with which topic? _____ p. 32
11. We finish by covering which important aspect of ham radio? _____ p. 32
12. What is Gordo's phone number if you have questions? 1-714 549-5000 _____ p.32

NOW, ON TO THE QUESTIONS FOUND IN THE BOOK.

This quiz is fill in the blanks. The test you will take will be multiple choice. On your official FCC test, the questions and answers will be IDENTICAL to the Q and As found my book. What follows here is a casual stroll through my Gordo technician book, with my little Gordo humor to keep you on point.

ABOUT HAM RADIO *and* CALL SIGNS (Pages 33~44)

Here we go with a Gordo-review of test topics, which I paraphrase here. The exact FCC test questions are in my yellow Gordo Technician Class book. Use the book to easily answer what I ask here, and fill in the blanks with a portion of the correct answer! I have reorganized all the materials for classes that I

teach, so use only my yellow TECHNICIAN CLASS book for finding the correct answer on the page numbers here!

1. Which agency regulates and enforces the amateur radio service in the USA? _____ p. 33
2. What is the minimum age for a ham radio license? (Hint, no age limit) _____ p. 33
3. Ham licenses are issued for how many years? _____ p. 35
4. What is the grace period for an expired license? _____ p. 35
5. How many license grants may a single operator hold for a personal license _____ p. 35
6. Give your call sign every how many minutes? _____ p. 37
7. Could a technician class licensee have a vanity call K1XXX? _____ p. 39
8. Club call signs may be granted to a club of _____ members _____ p.39
9. No call sign is given while controlling _____ p. 38
10. If you're licensed in New York, what number will be in your first call sign? _____ p. 41
11. Phonetic words for the letters H A M? _____ p. 39
12. What spoken language is used to identify your call sign letter by letter? _____ p. 40
13. Which ITU region are we in? _____ p. 41
14. May we send third party traffic to Haiti? _____ p. 43
15. When visiting Iceland, do we have a US reciprocal agreement? _____ p. 44
16. Great web resource to look up ham radio call signs? _____ p. 44

FABULOUS WEB SITE: www.qrz.com is a fabulous website, from looking up call signs to propagation, and all the fun ham radio news fit to print. Check it out for practice exams, too! It is the number one source of great ham info!

CONTROL (Pages 45~50)

Most hams know the rules and regulations, so jump right in!

1. Every transmitting station needs to have an _____ operator? p. 45
2. Who may designate an alternate control operator? _____ p. 46

3. May a technician class operator transmit on extra class frequencies? _____ p. 47
4. Are school teachers, at work, allowed to demonstrate ham radio in the classroom? _____ p. 49
5. A good web site to find some ham radio operating aids and references? _____ p. 50

Other great web sites are www.arrl.org , www.eham.net for practice tests, <http://aa9pw.com> for Morse code and more practice exams.

MIND THE RULES (Pages 51~54)

The ham radio service is self- policing. You gotta be REAL bad for the FCC to come knocking! Fellow hams are always there to keep us on the straight and narrow path for good operating techniques.

1. Is willful interference allowed on the ham radio service? _____ p. 51
2. What kind of transmission might be prohibited? _____ p. 51
3. Give one example of a legal one-way transmission _____ p. 52
4. May a ham operator use a voice scrambler for privacy? _____ p. 53
5. May a ham buy or sell, occasionally, their radio gear over the air? _____ p. 54
6. May a technician class operator play music for fun over the air? _____ p. 53
8. What might result if the FCC can't reach you by mail? _____ p. 54
9. Where might you purchase a printed copy of the ham radio Part 97 Rules? (Hint W5YI.org) ____ p.50

TECH FREQUENCIES (Pages 55~64)

Do not panic...you do not need to memorize each and every technician class band! That is why I make up band charts that you see in the book, or receive free from me, in your graduation package, page 212! The book has the exact FCC test questions – no more, no less! This fill in the blanks is to get you warmed up to the fun book and audio CDs.

1. What does the abbreviation “RF” stand for? _____ p. 55
2. What are two components of a radio wave? _____ p. 55
3. The velocity of radio waves through free space in meters is? _____ p. 56
4. The abbreviation “MHZ” stands for? _____ p. 57

5. Frequency bands are usually identified by? _____ p. 58
6. Frequency and wavelength are inversely proportional. What is that magic number? _____ p. 59
7. 52 MHz is located in which meter band? _____ p. 61
8. 146.52 MHz is located in which meter band? _____ p. 61
9. What precaution when transmitting next to a band edge? _____ p. 62
10. 223.5 MHz is located on which meter band? _____ p. 62
11. 446 MHz Simplex is located on which meter band? (hint hint, the 446 MHz band) _____ p. 63
12. Is a band plan “voluntary” or enforced by FCC rules? _____ p. 62
13. Where might you score a free color band plan lookup? _____ p. 63

OK, back to abbreviations.....Megahertz is MHz, upper case M and H. Kilohertz is abbreviated lower case k , upper case H, and lower case z = kHz. A ham radio writer is considered a LID (poor operator) for not getting MHz and kHz properly abbreviated!

MHz!

kHz!

YOUR FIRST RADIO (Pages 65~68)

Your very first radio is usually a dual band 2 meter/440 MHz hand held. Buy this radio from an authorized USA ham radio dealer. The imported Chinese radios are more for business band, and not easy to program in the field for ham repeater channels. Support our ham radio service providers – buy local!

1. What does the “PTT” button do on your mic? _____ p. 65
2. Have your radio pre-_____ by your local ham dealer or club _____ p. 65

*** Gordo here. If you purchased a Chinese cheap radio over the internet, it will be mighty difficult to program memory channels in the field, and with no fellow ham to help you, you won't have a clue what repeater frequencies to put in memory, plus the offset, plus the CTCSS tone.

BUY YOUR GEAR FROM USA AUTHORIZED HAM RADIO DEALERS! Then, let the local dealer or local hams help you program that hand held for local channels, to get you started on the air! Join a ham radio club, and let them help you clone your radio to favorite local ham repeaters and the International Space Station, (145.800 MHz) plus all those ham radio satellites!

If you already have ANY hand held radio, find local club members or local fellow hams who can help you get it channeled up for local repeaters! **GET LOCAL HELP** with your new radio programming!

3. Store favorite frequencies in your radio's _____ p. 65
4. Don't use a rubber duck antenna inside your _____ p. 66
5. What type of modulation is commonly used for 2 meters and the 440 MHz band? _____ p. 67
6. Packet radio uses this type of modulation, too. _____ p. 67
7. Another name for a radio that is controlled by your favorite computer? (HINT, software defined)p. 68

GOING SOLO – YOUR FIRST AMATEUR RADIO TRANSMISSION (Pages 69~78)

1. Speak into your radio's _____ p. 70
2. Listen to your radio's audio on this. _____ p. 70
3. What circuit silences background noise? _____ p. 69
4. Transmitting and receiving on the same frequency is called what? _____ p. 70
5. We use duplex when transmitting through a (hint repeater) _____ p. 71
6. When you test your radio on the air be sure to do this. _____ p. 71
7. What does CQ mean? _____ p. 72
8. Do this before transmitting on any frequency. _____ p. 74
9. How do you call another station if you know their call sign? _____ p.73
10. Should you call "CQ" on your local hand held radio? _____ p. 72

***Gordo here, study my yellow TECHNICIAN CLASS BOOK page 74 for a fun and smart way to get on the air for the first time. In my book, I also have a free audio CD with info on how to make your first on-air call! PAGE 74 IS IMPORTANT!!! PLAY THE AUDIO CD IN THE FRONT OF MY BOOK!

11. What is the "Q" signal for interference? _____ p.77
12. Someone asks "QTH". What do they want? _____ p. 76
13. Your pal is going "QRT". What does this mean? _____ p. 76
14. What is your grid location when operating near Miami, FL? _____ p. 78 & map at p.228
15. During a radio weekend contest, give only your information and _____ p.77

REPEATERS (Pages 79~86)

Repeaters are on building tops and mountain tops for extending your hand held range. Some are even connected to the internet for extending your hand held range around the world to other repeaters. (IRLP) (page 83) Listen for at least a day or two before transmitting on a new repeater, to get the hang of things. SUPPORT that local repeater, if you are a regular user. Savvy hams put up repeaters for free, so give their \$5,000 systems all the support you can, as a regular user. (<http://rprrlist.w6jpl.ampr.org>)

1. What device re-transmits amateur radio signals from your little handheld? _____ p. 79
2. What is the term describing repeater transmit and repeater receive _____ p. 80
3. What is the usual offset for the 2 meter band? _____ p. 81
4. What is the usual repeater offset for the 70 cm band? _____ p.81
5. Most repeaters require CTCSS. What is this? _____ p. 82
6. Who assigns specific frequencies to repeaters? _____ p. 83
7. Do this before transmitting on any ham radio channel. _____ P. 84
8. Say THIS instead of CQ on a repeater, to announce that you are listening for a call. _____ p. 84

Repeaters are party lines – everyone is listening, so always pause a few seconds before you pick up the conversation, to let others come in and join your chat. Do not “quick key” a repeater. Again, listen for a day or two to get the hang of how to operate on an open repeater.

EMERGENCY! (Pages 87~92)

1. Which radio call has the highest priority? _____ p.87
2. Whose rules prevail when handling emergency radio calls? _____ p. 88
3. What do the letters RACES stand for? _____ p. 88
4. What do the letters ARES stand for? _____ p. 89
5. What does “NCS” stand for in emergency comms? _____ p. 90
6. The good emergency communicator will always pass a message exactly as _____ p. 91
7. What does the term “check” mean? _____ p. 92
8. Use this alphabet when spelling unusual words? _____ p. 91

WEAK SIGNAL PROPAGATION (Pages 93~102)

Here we learn how far your radio signals may travel to another station, or a distant repeater. On your dual band radio, weather conditions may give your signal an every-July boost! On 10 meters High Frequency, summertime and December sporadic E conditions may refract your 10 meter and 6 meters signals off the ionosphere, and come back down in another state, or another country, during daylight hours. WOW, ham radio will be F U N !

1. How much further do VHF/UHF radio signals travel line of sight? _____ p. 93
2. Are VHF and UHF signals regularly affected by the ionosphere? _____ p. 94
3. Use “knife edge” propagation to transmit over? _____ p. 95
4. A warm air inversion creates what type of propagation? _____ p. 95
5. How many layers are there of the ionosphere during the day? _____ p. 97
6. Catch a falling star and try this? _____ p. 96
7. Ultraviolet radiation from this heavenly body ionizes the ionospheric layers? _____ p. 98
8. Best time for 10 meter Technician Class skywaves? _____ p.99
9. Which property of a radio wave describes its polarization? _____ p. 101

TALK TO OUTER SPACE (Pages 103~108)

I know....I know....you are spaced out with all this info to learn.....but as a new technician class operator, we WANT you space-savvy, to work the heavens!

1. Are Technician Class operators permitted to transmit to the International Space Station? _____ p. 103
2. Hear the International Space Station on this frequency during a pass_ FM _____ p. 104
3. What does LEO refer to? _____ p. 104
4. Signals containing information from a satellite onboard computer? _____ p. 105
5. What causes satellite signals to fade in and out? _____ p. 106
6. Compensate for this when the satellite is approaching from the horizon. _____ p. 106
7. In the U/V mode, on what band do you transmit? _____ p.108
8. How much power should you use when transmitting to a satellite? _____ p. 107
9. Which ham group promotes space communications? _____ p. 108

10. Great WWW to learn how to work satellites _____ p.108
11. Simple satellite portable antenna for hand held operation _____ p.108
12. Find the next satellite pass with this WWW _____ p.108

YOUR COMPUTER GOES HAM DIGITAL (Pages 109~118)

1. Is Morse code a digital mode? (hint, hint, YES, and it's fun to try!) _____ p. 109
2. The bottom of 6 meters and 2 meter bands is limited to this: _____ p. 109
3. Could your home computer or laptop be rigged up to send and receive CW? _____ P. 110
4. What device connects between your transceiver and your computer for digital? _____ p. 111
5. What portion of your computer decodes digital signals? _____ p. 111
6. What are packet, IEEE 802.11, JT65 plus the new FT8 modes? _____ p. 112
7. What is the exciting mode APRS where we see you on our computer screen? _____ p. 114
8. An APRS station gets its position from what? _____ p. 114
9. What connects a ham radio station into the internet? _____ p. 115
10. What do the letters IRLP stand for? _____ p. 115
11. What do the letters VOIP stand for? _____ p. 116
12. What is the bandwidth of analog fast-scan ham transmissions on 70 cm? _____ p. 118
13. What is the WWW for the fun ATV fast scan analog/digital modes _____ p. 118

MULTI-MODE RADIO EXCITEMENT (Pages 119~130)

Once you have been on the air with your hand held and mobile FM transceiver, you may want to get a multi- mode base station which will allow for working 10 meters and all the High Frequency Bands. Some multi-mode transceivers let you work 2 meters on single sideband, as well as 432 MHz SSB, to work some of those multi- mode satellites!

1. The fancy name for your transmitter and receiver packaged in one handheld device? _____ p. 119
2. What type of transceiver is needed to operate satellite SSB? _____ p. 120
3. Do we use upper or lower sideband on 10 meters? _____ p. 121

4. You mean new technician class operators can work the long range bands too? _____ p.120
5. What is the name used to describe speech within an RF carrier? _____ p. 121
6. What is the bandwidth of an SSB voice signal? _____ p. 122
7. What do the letters “RIT” stand for? _____ p. 123
8. What is the skinny bandwidth of a Morse Code CW signal? _____ p. 124
9. What radio transmission mode has the narrowest bandwidth? _____ p. 124
10. Give the term describing the ability to receive a weak signal? _____ p. 125
11. What is the term describing a radio’s ability to separate multiple signals? _____ p. 126
12. What does the term AGC stand for in a SSB receiver? _____ p. 126
13. What device would convert a 2 meter radio up to 10,000 MHz band? _____ p. 126

Gordo here... on page 127 , that is me aboard the boat talking on 10,368.1 MHz microwave frequencies to shore stations hundreds of miles away! You can do this too with your new technician class license. Most important, after you pass the test, GET ON THE AIR!

14. What is a DMR hand held radio? _____ p.128
15. How do you join a DMR digital mobile radio TALK GROUP? _____ p.128
16. What the heck is a DIGIPEATER? _____ p. 129
17. Don’t throw out your old computer router! Use it on _____ p.129

Gordo again....if YOU are in to computers, ham radio will ADD some real excitement, using your computer as a software defined radio (SDR), where the computer will fill the screen with radio signals! The new mode “FT8” could let you work other stations all over the world in 15 second data bursts that you can’t even hear over the speaker! And... computers set up with repeaters on mountaintops and building tops will let your little hand held radio be heard ALL OVER THE WORLD ON OTHER REPEATERS, called IRLP. Look up WWW.WINSYSTEM.ORG ! Then there is D-Star, Echolink, DMR, and Broadband-Hamnet – all of these new modes are wide open for YOU to operate as a technician class operator. See page 130 for other great WWW sites!

RUN SOME INTERFERENCE PROTECTION (Pages 131~138)

1. If your hand held radio battery is low, your voice may _____ p. 131
2. On a worldwide radio, don’t set the mic gain too _____ p. 131
3. On a 10 meter worldwide radio, use this to block ignition interference. _____ p. 132

4. What is the likely source of a whistle on your mobile radio transmission? _____ p. 133
5. Distorted 10 meter transmit audio may be cured by using one of these. _____ p. 133
6. Fundamental overload to a TV might be resolved with tightening _____ p. 133
7. What type of wires should be used to minimize unwanted signal coupling? _____ p. 134
8. Put these on your corded telephone to minimize transmit interference? _____ p. 135
9. Part 15 devices use high power or low power radio signals? _____ p. 136
10. Your new worldwide 10 meter transceiver comes over your neighbor's computer speakers when you transmit. What may help resolve this common interference _____ p. 137

Gordo here again – your little 2 meter/440 MHz hand held will seldom interfere with home electronics! The high frequency worldwide 10 meter radio, where you can bounce signals off the ionosphere, may come over nearby computer speakers, and this problem is EASILY resolved with new shielded speaker wires, and common CHOKES that snap over these wires, seen on page 137. All ham radio stores carry these chokes that simply snap over wires! Easy fix!

If you are in to electronics big time, look at Page 138 at ALL the books available to learn more!

ELECTRONS – GO WITH THE FLOW (Pages 139~151)

Gordo here... have you ever been bitten by a frayed lamp cord, or stuck your finger (accidentally) in a lamp socket? Feel that nasty BUZZ? This is electricity, so let's dive in and see what it is all about to power your new ham radio gear at the house, SAFELY!

1. What does "EMF" mean? _____ p. 139
2. What is the basic unit of electromotive force? _____ p. 139
3. Name one type of rechargeable battery for your new handheld. _____ p. 140
4. Which battery type, found in your big flashlight, is NOT rechargeable? _____ p. 140
5. What do we call the flow of electrons? _____ p. 141
6. Amperes is the unit used to measure what? _____ p. 141
7. What material is a good electrical conductor? _____ p. 142
8. This device allows current to flow in one direction only. _____ p. 143
9. What component opposes the flow of current in a DC circuit? _____ p. 144

10. A potentiometer is actually a variable? _____ p. 144
11. What material is a good electrical insulator? _____ p. 145
12. Another name for a coil of wire? _____ p. 145
13. The word used to describe energy stored in a magnetic field? _____ p. 145
14. The word used to describe energy stored in an electrical field? _____ p. 146
15. A component used to turn on and off a circuit? _____ p. 147
16. A component that protects from current overload? _____ p. 148
17. This device may amplify a signal? _____ p. 148
18. What does the abbreviation “FET” stand for? _____ p. 150

Gordo AGAIN...if you ever want to see the best TECHNICAL books for electrical and ham radio, the ARRL HANDBOOK, along with the Naval Electrical & Electronics Training System , are the BEST, with details on page 151. Also check out all the great books we offer on the last page of your home study!

IT'S THE LAW, PER MR. OHM! (Pages 152~158)

Oh, you are a little rusty on MATH??? Do not panic – I will make it fun and easy to remember in the book, and right here..... by either multiplying or dividing the SMALLER number in to the LARGER number for the correct answer. No answers will come out in a fraction – easy stuff! Keep the book handy, and read on! Remember, Voltage (E) is like water pressure at the spigot in your garden. Now turn on the valve, and Current (I) is like the flow in that garden hose. Resistance (R) is like a kink in the hose, restricting the flow of water. The Power (P) to make your lawn look green is water pressure (E) x the current (I) coming out of the hose!

1. Draw 2 different types of Ohm’s Law circles: _____ p. 152
2. Power equals _____ x _____ p. 153
3. Voltage equals _____ x _____ p. 154
4. What is voltage across each of two parallel components? _____ p. 155
5. What is voltage across each of two SERIES components? _____ p. 155
6. What circuit has the same CURRENT through all components? _____ p. 157
7. What happens to current at the junction of two components in parallel? _____ p.158
8. If you are calculating current, it is voltage divided by? _____ p. 157

9. If you are calculating resistance, it is voltage divided by? _____ p. 158
10. What is the voltage across a 2 Ohm resistor with 0.5 amps flowing through it? _____p. 154
11. What is the current flowing through a 24 Ohm resistor connected across 240 volts? _____p. 157
12. What is the resistance that draws 4 amperes from a 12 volt battery? _____p. 158
13. In most of the exam calculations, you usually are dividing the larger number by the? _____p. 158

PICTURE THIS! (Pages 159~170)

All hams know what simple component diagrams look like. Nothing hard here, but scope out the book to see for yourself what all the squiggly lines mean!

1. What is the name for components depicted on an electrical wiring diagram? _____p. 159
2. Draw the symbol for a variable inductor. _____p. 160
3. Draw the symbol for an antenna. _____p. 160
4. Draw the symbol for a fixed resistor. _____p. 161
5. Draw the symbol for a transistor. _____p. 161
6. Draw the symbol for a pilot lamp. _____p. 161
7. See page 162, Figure 2, and learn each of the component diagrams! _____p. 162
8. A transmit power increase from 10 watts to 20 watts is how many dB increase? _____p. 165
9. What does LED stand for? _____p. 166
10. How many volts is 1 kilovolt? _____p. 167
11. Convert 28,400 kilohertz to megahertz. _____p. 167
12. How many watts is 500 milliwatts? _____p. 168
13. A cold solder joint looks like this: _____p. 169
14. Connecting your Ohm meter on ohms scale to 12 volts DC will result in: _____p. 170

Now that wasn't that hard, was it? That figure 2 on page 162 is a common test question, so learn to ID each of the squiggles!

ANTENNAS (Pages 171~178)

Great signals come from any kind of radio with GREAT ANTENNAS.

1. What is the name of a simple wire antenna that is one-half wavelength long?
fed by coax in the middle? _____ p. 171
2. In which direction is the signal strongest from a half wave antenna? _____ p. 172
3. Do this to the half wave antenna to raise its resonant frequency. _____ p. 172
4. What is another name for a quarter wavelength vertical antenna? _____ p. 173
5. A dish antenna is always very _____ p. 173
6. What is another name for a beam antenna? _____ P. 174
7. A name for finding unknown signals with a portable beam? _____ p. 175
8. On a VHF or UHF contact, make sure both antennas are of the same _____ p. 176
9. Best place to mount a VHF or UHF mobile antenna for best performance.....this was an older test question which illustrated a mobile antenna in the center of the car roof, with a hole in the center of the roof for the antenna mounting. Not necessary – a magnetic mount will do fine on the trunk lid, or get a trunk lip mount that won't leave any holes, and is very sturdy and won't blow off! But most important, get your hand held radio hooked up to an outside mobile antenna.

FEED ME WITH SOME GOOD COAX! (Pages 179~187)

Think of COAX like that garden hose. Coax must handle pressure and volume, and take your transmit radio energy and squirts it to the antenna without leaks. It takes antenna receive signals and dribbles it down to your radio, with no leaks to let in noise on receive.

1. Is coax cable round or flat? _____ p. 179
2. Why is coax cable easy to use? _____ p. 179
3. What is the common impedance of coax for ham radio use? _____ p. 180
4. What type of coaxial cable connector are you likely to find on your new
10 meter high frequency radio? _____ On your dual band hand held? _____ p.180

5. Frequencies above 400 MHz need this type of waterproof cable connector. _____ p. 181
6. What is a common cause of coax cable failure? _____ p. 181
7. The physically larger size coax usually offers _____ line losses? p. 182
8. What is a perfect SWR match between the antenna and the feed line? _____ p. 184
9. What's the likely cause of an SWR reading of 4:1? _____ p. 184
10. What device allows you to test a transmit signal without interfering with others? _____ p. 187

Think of "SWR" as garden hose water that leaks out under your thumb, because your neighbor drove over the end of it in the driveway. You no longer have a good thumb connection to squirt out the end of the crunched hose end!

SAFETY FIRST! (Pages 189~201 the end of the Q&A's!!)

WATCH OUT! WATCH OUT! VOLTAGE IS DANGEROUS!

1. Good ways to guard against getting shocked? _____ p. 189
2. What does the green wire in an AC power cord provide? _____ p. 189
3. The fuse interrupts power in case of what? _____ p. 190
4. What might happen if you replace a blown 5 amp fuse with a 50 amp fuse? _____ p. 190
5. What health hazard is current passing through your body? _____ p. 191
6. If you overcharge a lead acid battery, it could _____ p. 192
7. Watch out for these when putting up an antenna or tower! _____ p. 193
8. Should you ever climb a tower without a helper and proper safety equipment? _____ p. 193
9. Good equipment to wear when climbing up the tower? _____ p. 194
10. Add this to a tower guy turnbuckle for safety _____ p. 194
11. On a crank-up 3-section tower, never climb it unless it is first cranked all the way _____ p. 195
12. What is the best type of conductor for RF grounding? _____ p. 196
13. When assessing RF exposure, dramatically raising power output is safe or unsafe? _____ p. 197
14. What frequency band has the lowest value for maximum permissible exposure? _____ p. 198

15. Keep everyone safe around your radio system by operating at what power output levels? (Hint: MINIMUM LOW -- NOT HIGH POWER) _____ p. 198
16. What might happen if someone accidentally touches your mobile bare whip antenna when someone else is transmitting? _____ p. 201

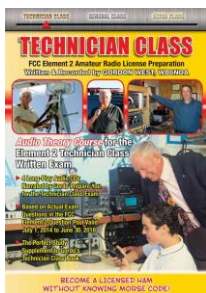
TAKING THE EXAM & RECEIVING YOUR FIRST RADIO LICENSE (Pages 202~212)

WHEW! YOU MADE IT THROUGH THE ENTIRE TOPICS AND SOME FUN QUESTIONS THAT COULD BE ON THE TEST! Great work! Now, here is what the exam room is all about!

1. What number do you call to locate an exam site? _____ p. 202
2. Typically, how much cash a roo does it cost to take the exam? _____ p. 203
3. Are calculators permitted during the exam? _____ p. 203
4. Can your exam use different words or numbers? NEVER! What you see in the yellow book is exactly what might be chosen for your test! _____
5. If this is your first license, the required social security number will be converted to what? ____ p. 204
6. Your E mail must be legible for the FCC to Email your license!! YES YES YES ! The FCC will not normally mail out a paper copy – you must easily download it from the FCC site in the big book, page 207. Follow their E mail instructions to score your new call sign!
7. What system may allow you to trade your call sign for one with your initials? _____ p.210
8. Which page in the book shows me issuing your passing certificate?
and tells where to write for that free certificate? _____ p. 212
9. Where, in the book, will you find RF Safety Tables, common CW abbreviations?
and the Element 2 Q&A Cross Reference list? _____ p. 221
10. Morse code is FUN. What page has the chapter on learning the code? _____ p. 213

Additional Learning Resources

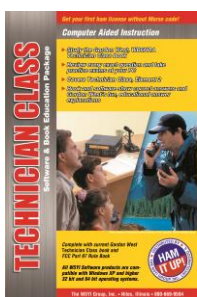
For your exam preparation, or to continue your education after you receive your FCC Technician Class License



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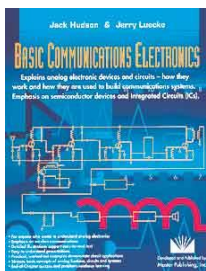
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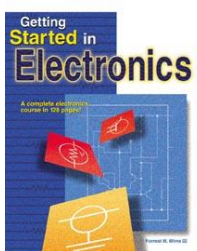
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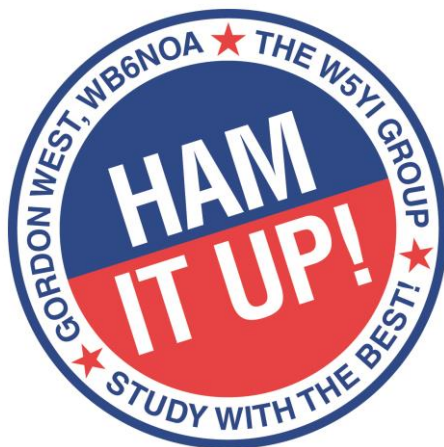
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