



Gordon West, WB6NOA & The W5YI Group

2014-2018 Technician Class PreStudy Q & A Course

Welcome to ham radio! Your classroom instructor and I have some exciting classes 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 by studying your book, and using this prestudy material, you'll also be ready to get on the air!

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

The questions in this prestudy are in a 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!

We list some additional training resources in the back of this booklet. You may want to obtain them from The W5YI Group and use them to help you prepare for your upcoming exam.

So open your *Technician Class* book, play the included audio CD, and then begin this fun pre-study!

I come with the book, so if you have any questions, don't understand a concept, or simply want my personal words of encouragement, call me at 714-549-5000 M-F, between 8 am and 4 pm and let's talk ham radio! I'm in California, so please pay attention to the time difference from your study location.

Gordon West, WB6NOA

GETTING INTO HAM RADIO (pages 1~4)

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. What object in outer space can you bounce a signal off of? _____ p. 3
8. Ham radio live color TV is called? _____ p. 3
9. A fellow ham to show you the ropes is called what? _____ p. 4

TECHNICIAN CLASS PRIVILEGES (pages 5~20)

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 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? _____ p. 15

14. What is the frequency range of voice privileges on 10 meters? _____ p. 16
15. What chapter explains how to learn Morse code? _____ p. 17
16. Above what frequency are ham bands shared with other services? _____ p. 18
17. Ask your exam team how to join a _____ p. 19

A LITTLE HAM HISTORY (pages 21~26)

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 classes of currently-issued ham radio licenses? _____ p. 24
6. Can you jump over Technician to go direct to General? _____ 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. On what date was the Morse code test eliminated? _____ p. 26
11. However, Gordo and Eric believe that all good hams should know _____ p. 26

GETTING READY FOR THE EXAM (pages 27~32)

1. How many total questions on the Technician Class exam? _____ p. 27
2. How many total questions are 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 Subelement 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? _____ p.32

ABOUT HAM RADIO and CALL SIGNS (pages 33~50)

1. Which agency regulates the amateur radio service in the USA? _____ p. 33
2. What is the minimum age for a ham radio license? _____ 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. Another name for your ham radio "apparatus"? _____ p. 37
6. How often should you give your call sign? _____ p. 39
7. If you're licensed in New York, what number will be in your first call sign? _____ p. 41
8. Phonetic words for the letters H A M? _____ p. 43
9. What spoken language is used to identify your call sign? _____ p. 44
10. Which ITU region are we in? _____ p. 45
11. May we send third party traffic to Haiti? _____ p. 47
12. When visiting Israel, do we have a US reciprocal agreement? _____ p. 49
13. Great web resource to look up ham radio call signs? _____ p. 50

CONTROL (pages 51~56)

1. Every transmitting station needs a _____ operator? p. 51
2. The spot where you have complete capability to turn the equipment on or off is called a _____ p. 53

3. Automatic Packet Position Reporting System is under what control? _____ p. 54
4. Are school teachers, at work, allowed to demonstrate ham radio in the classroom? _____ p. 55
5. A good web site to find some ham radio operating aids and references? _____ p. 56

MIND THE RULES (pages 57~62)

1. What part of the FCC Rules cover ham radio? _____ p. 57
2. What kind of transmission might be prohibited? _____ p. 57
3. How much power should you use for transmit? _____ p. 58
4. Is willful interference ever allowed on ham radio? _____ p. 58
5. May intentional secret codes be transmitted over ham radio? _____ p. 60
6. Normally, is music allowed over ham radio? _____ p. 61
7. May we buy and sell our own ham radio gear on the air? _____ p. 61
8. What might result if the FCC can't reach you by mail? _____ p. 62
9. Where might you purchase a printed copy of the ham radio Part 97 Rules? _____ p. 62

TECH FREQUENCIES (pages 63~72)

1. What does the abbreviation "RF" stand for? _____ p. 63
2. What are two components of a radio wave? _____ p. 64
3. The velocity of radio waves through free space in meters is? _____ p. 64
4. The abbreviation "kHz" stands for? _____ p. 65
5. Frequency bands are usually identified by? _____ p. 66
6. Frequency and wavelength are inversely proportional. What is that magic number? _____ p. 66
7. 52 MHz is located in which meter band? _____ p. 68
8. 146.52 MHz is located in which meter band? _____ p. 68
9. What type of transmission is allowed in Mode-Restricted sub-bands? _____ p. 69

10. 223.5 MHz is located on which meter band? _____ p. 69
11. 446 MHz Simplex is located on which meter band? _____ p. 70
12. Is a band plan “voluntary” or enforced by FCC rules? _____ p. 71
13. If you transmit right at a band edge, could signals extend beyond the edge and be illegal? _____ p. 72

YOUR FIRST RADIO (pages 73~76)

1. What does the “PTT” do? _____ p. 73
2. Have your radio pre-_____ by your local ham dealer or club. p. 73
3. Store favorite frequencies in your radio’s _____ p. 73
4. Don’t use a rubber duck antenna inside your _____ p. 74
5. What type of modulation is commonly used for 2 meters and the 440 MHz band? _____ p. 75
6. Packet radio uses this type of modulation, too. _____ p. 76
7. Another name for a radio that is controlled by your favorite computer? _____ p. 76

GOING SOLO – YOUR FIRST AMATEUR RADIO TRANSMISSION (pages 79~90)

1. Speak into your radio’s _____ p. 79
2. Listen to your radio’s audio on this. _____ p. 79
3. What circuit silences background noise? _____ p. 80
4. Transmitting on the same frequency is called what? _____ p. 80
5. We use duplex when transmitting through a _____ p. 81
6. When you test your radio on the air be sure to do this. _____ p. 82
7. What does CQ mean? _____ p. 82
8. Do this before transmitting on any frequency. _____ p. 83
9. Most repeaters also require this to “unlock” their receivers? _____ p. 84
10. Another name for a rapid, fluttering sound from a mobile-in-motion transmission? _____ p. 85

11. What is the “Q” signal for interference? _____ p. 86-87
12. Someone asks “QTH”. What do they want? _____ p. 86
13. Your pal is going “QRT”. What does this mean? _____ p. 86
14. What is your grid location when operating near Miami, FL? _____ p. 88
15. UHF signals may do this outside downtown buildings. _____ p. 89

REPEATERS (pages 90~97)

1. What device re-transmits amateur radio signals from your little handheld? _____ p. 91
2. What is the term describing repeater transmit and repeater receive? _____ p. 92
3. What is the usual offset for the 2 meter band? _____ p. 93
4. What is the usual repeater offset for the 70 cm band? _____ p. 93
5. Most repeater require CTCSS. What is this? _____ p. 94
6. Who assigns specific frequencies to repeaters? _____ p. 95
7. Do this before transmitting on any ham radio channel. _____ p. 97
8. Say THIS instead of CQ on a repeater, to announce that you are listening for a call. _____ p. 99

EMERGENCY! (pages 99~104)

1. Which radio call has the highest priority? _____ p.99
2. What do the letters RACES stand for? _____ p. 100
3. What do the letters ARES stand for? _____ p. 101
4. The good emergency communicator will always pass a message exactly as _____ p. 103
5. What does the term “check” mean? _____ p. 104
6. Use this alphabet when spelling unusual words? _____ p. 104

WEAK SIGNAL PROPAGATION (pages 105~112)

1. What do we call radio signals that travel through air and space? _____ p. 105
2. Are VHF and UHF signals regularly affected by the ionosphere? _____ p. 106
3. Use “knife edge” propagation to transmit over? _____ p. 106
4. A warm air inversion creates what type of propagation? _____ p. 107
5. How many layers are there of the ionosphere during the day? _____ p. 108
6. Catch a falling star and try this? _____ p. 109
7. Ultraviolet radiation from this heavenly body ionizes the ionospheric layers? _____ p. 109
8. Best time for 10 meter Technician Class skywaves? _____ p.110
9. Which property of a radio wave describes its polarization? _____ p. 111

TALK TO OUTER SPACE (pages 113~118)

1. Are Technician Class operators permitted to transmit to the International Space Station? _____ p. 113
2. What does LEO refer to? _____ p. 113
3. Signals containing information from a satellite onboard computer? _____ p. 115
4. What causes satellite signals to fade in and out? _____ p. 115
5. Compensate for this when the satellite is approaching from the horizon. _____ p. 116
6. In the V/U mode, on what band do you transmit? _____ p.117
7. How much power should you use when transmitting to a satellite? _____ p. 117
8. Is a telecommand station for one way or two way transmission to a satellite? _____ p. 118

YOUR COMPUTER GOES HAM DIGITAL (pages 119~126)

1. You might use a “straight key” to send what type of message? _____ p. 119
2. What device connects between your transceiver and your computer for digital? _____ p. 120
3. What portion of your computer decodes digital signals? _____ p. 121

4. What do the letters ARQ represent? _____ p. 121
5. What are the words for APRS? _____ p. 122
6. An APRS station gets its position from what? _____ p. 123
7. What connects a ham radio station into the internet? _____ p. 124
8. What do the letters IRLP stand for? _____ p. 124
9. What do the letters VOIP stand for? _____ p. 125
10. What is the bandwidth of analog fast-scan ham transmissions on 70 cm? _____ p. 126

MULTI-MODE RADIO EXCITEMENT (*pages 127~136*)

1. The fancy name for your transmitter and receiver packaged in one handheld device? _____ p. 127
2. What type of transceiver is needed to operate satellite SSB? _____ p. 127
3. Do we use upper or lower sideband on 10 meters? _____ p. 129
4. What is the name used to describe speech within an RF carrier? _____ p. 130
5. What is the bandwidth of an SSB voice signal? _____ p. 130
6. What do the letters “RIT” stand for? _____ p. 131
7. Are all microphone connectors wired the same way? _____ p. 132
8. What radio transmission mode has the narrowest bandwidth? _____ p. 132
9. Give the term describing the ability to receive a weak signal? _____ p. 134
10. What is the term describing a radio’s ability to separate multiple signals? _____ p. 134
11. What does the term AGC stand for in a SSB receiver? _____ p. 135
12. Use this to power your radio equipment? _____ p. 136

RUN SOME INTERFERENCE PROTECTION (pages 137~144)

1. What could happen if the microphone gain control is turned all the way up on your new 10 meter multi-mode radio? _____ p. 137
2. On a 10 meter worldwide radio, use this to block ignition interference. _____ p. 138
3. What is the likely source of a whistle on your mobile radio transmission? _____ p. 138
4. Distorted transmit audio may be cured by using one of these. _____ p. 139
5. Fundamental overload and spurious emissions are considered? _____ p. 140
6. What type of wires should be used to minimize unwanted signal coupling? _____ p. 141
7. Put these on your corded telephone to minimize transmit interference? _____ p. 142
8. Part 15 devices use high power or low power radio signals? _____ p. 143
9. Your new worldwide 10 meter transceiver comes over your neighbor's computer speakers when you transmit. What may help resolve this common interference? _____ p. 144

ELECTRONS – GO WITH THE FLOW (pages 145~156)

1. What does “EMF” mean? _____ p. 145
2. What is the basic unit of electromotive force? _____ p. 145
3. Name one type of rechargeable battery for your new handheld. _____ p. 146
4. Which battery type, found in your big flashlight, is NOT rechargeable? _____ p. 146
5. What do we call the flow of electrons? _____ p. 147
6. Amperes is the unit used to measure what? _____ p. 148
7. What material is a good electrical conductor? _____ p. 148
8. This device allows current to flow in one direction only. _____ p. 149
9. What component opposes the flow of current in a DC circuit? _____ p. 149
10. A potentiometer is actually a variable? _____ p. 150
11. What material is a good electrical insulator? _____ p. 150

12. Another name for a coil of wire? _____ p. 150
13. The word used to describe energy stored in a magnetic field? _____ p. 151
14. The word used to describe energy stored in an electrical field? _____ p. 151
15. A component used to turn on and off a circuit? _____ p. 152
16. A component that protects from current overload? _____ p. 153
17. This device may amplify a signal? _____ p. 153
18. What does the abbreviation "FET" stand for? _____ p. 155

IT'S THE LAW, PER MR. OHM! (pages 159~162)

1. Draw 2 different types of Ohm's Law circles: _____ p.159
2. Power equals _____ x _____ p. 159
3. Voltage equals _____ x _____ p. 159
4. If you are calculating current, it is voltage divided by? _____ p. 160
5. If you are calculating resistance, it is voltage divided by? _____ p. 160
6. What is the voltage across a 2 Ohm resistor with 0.5 amps flowing through it? _____ p. 160
7. What is the current flowing through a 24 Ohm resistor connected across 240 volts? _____ p. 161
8. What is the resistance that draws 4 amperes from a 12 volt battery? _____ p. 162
9. In most of the exam calculations, you usually are dividing the larger number by the? _____ p. 162

PICTURE THIS! (pages 163~174)

1. What is the name for components depicted on an electrical wiring diagram? _____ p. 163
2. Draw the symbol for a variable inductor. _____ p. 163
3. Draw the symbol for an antenna. _____ p. 163
4. Draw the symbol for a fixed resistor. _____ p. 165
5. Draw the symbol for a transistor. _____ p. 165

6. Draw the symbol for a pilot lamp. _____ p. 165
7. Which circuit controls voltage from a power supply? _____ p. 167
8. A transmit power increase from 10 watts to 20 watts is how many dB increase? _____ p. 168
9. What does LED stand for? _____ p. 169
10. How many volts are 1 kilovolt? _____ p. 170
11. Convert 28,400 kilohertz to megahertz. _____ p. 171
12. How many watts is 500 milliwatts? _____ p. 171
13. A cold solder joint looks like this: _____ p. 172
14. Connecting your Ohm meter to 12 volts DC will result in: _____ p. 173

ANTENNAS (pages 175~182)

1. What is the name of a simple wire antenna that is one-half wavelength long
fed by coax in the middle? _____ p. 175
2. In which direction is the signal strongest from a halfwave antenna? _____ p. 176
3. Do this to the halfwave antenna to raise its resonant frequency. _____ p. 176
4. What is another name for a quarter wavelength vertical antenna? _____ p. 177
5. A dish antenna is always very _____ p. 178
6. What is another name for a beam antenna? _____ P. 178
7. A name for finding unknown signals with a portable beam? _____ p. 179
8. On a VHF or UHF contact, make sure both antennas are of the same _____ p. 181
9. Best place to mount a VHF or UHF mobile antenna for best performance? _____ p. 182

FEED ME WITH SOME GOOD COAX! (pages 183~191)

1. Is coax cable round or flat? _____ p. 183
2. Why is coax cable easy to use? _____ p. 183

3. What is the common impedance of coax for ham radio use? _____ p. 184
4. What type of coaxial cable connector are you likely to find on your new
10 meter high frequency radio? _____ p. 184
5. Frequencies above 400 MHz need this type of waterproof cable connector. _____ p. 185
6. What is a common cause of coax cable failure? _____ p. 185
7. The physically larger size coax usually offers _____ line losses? p. 186
8. What is a perfect SWR match between the antenna and the feed line? _____ p. 188
9. What's the likely cause of an SWR reading of 4:1? _____ p. 189
10. What device allows you to test a transmit signal without interfering with others? _____ p. 191

SAFETY FIRST! (pages 193~205)

1. Good ways to guard against getting shocked? _____ p. 193
2. What does the green wire in an AC power cord provide? _____ p. 193
3. The fuse interrupts power in case of what? _____ p. 194
4. What might happen if you replace a blown 5 amp fuse with a 50 amp fuse? _____ p. 194
5. How can current flowing through your body hurt you? _____ p. 195
6. If you overcharge a lead acid battery, it could _____ p. 196
7. Watch out for these when putting up an antenna or tower! _____ p. 197
8. Should you ever climb a tower without a helper and proper safety equipment? _____ p. 198
9. Good equipment to wear when climbing up the tower? _____ p. 198
10. On a crank-up 3-section tower, never climb it unless it is first cranked all the way _____ p. 199
11. What is the best type of conductor for RF grounding? _____ p. 200
12. When assessing RF exposure, dramatically raising power output is safe or unsafe? _____ p. 201
13. What frequency band has the lowest value for maximum permissible exposure? _____ p.202

14. Keep everyone safe around your radio system by operating
at what power output levels? _____ p. 202
15. What might happen if someone accidentally touches your 10 meter antenna when
someone else is transmitting? _____ p. 205

TAKING THE EXAM & RECEIVING YOUR FIRST RADIO LICENSE (pages 207~216)

1. What number do you call to locate an exam site? _____ p. 207
2. Typically, how much does it cost to take the exam? _____ p. 207
3. Are calculators permitted during the exam? _____ p. 208
4. Can your exam use different words or numbers? _____ p. 209
5. If this is your first license, the required social security number
will be converted to what? _____ p. 210
6. What number will appear in your call sign? _____ p. 213
7. What system may allow you to trade your call sign for one with your initials? _____ p.214
8. Which page in the book shows me issuing your passing certificate,
and tells where to write for that free certificate? _____ p. 216
9. Where, in the book, will you find RF Safety Tables, common CW abbreviations,
and the Element 2 Q&A Cross Reference list? _____ p. 225

Additional Learning Resources...

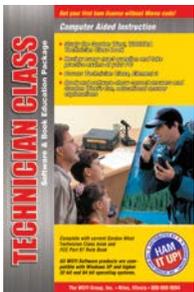
...for your exam preparation, or to continue your education after you receive your FCC Technician Class License.



Technician Class Audio Course

Welcome to Gordo's classroom! These 4 standard audio CDs, recorded by Gordon West, WB6NOA, with Eric Nichols, KL7AJ, talk you through the Element 2 Question Pool. The tracks on the CD match-up with the Technician Class book, and the material is enhanced with the sounds of ham radio excitement! Includes free Part 97 Rule Book.

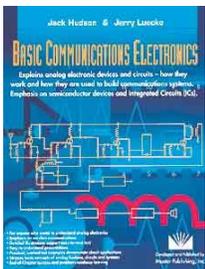
GWTW-14 \$29.95



Technician Class HamStudy software

You already have the *Technician Class* study manual. Consider adding our interactive software to help you get ready for your big exam! When you answer a question wrong on the practice exam, the explanation from Gordo's book appears on the screen to reinforce your learning. For Windows operating systems. Includes free Part 97 Rule Book. Special offer – software on CD only (no book since you already have it).

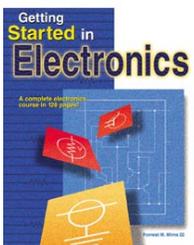
NCS software only \$12.00



Basic Communications Electronics

By Jack Hudson, W9MU, and Jerry Luecke, KB5TZY. Explains analog electronic devices and circuits – how they work and how they are used to build communication systems. For anyone who wants to understand analog electronics and wireless communications. When you're done studying this book, you'll really know what's going on inside your new ham radio!

BCOM \$19.95



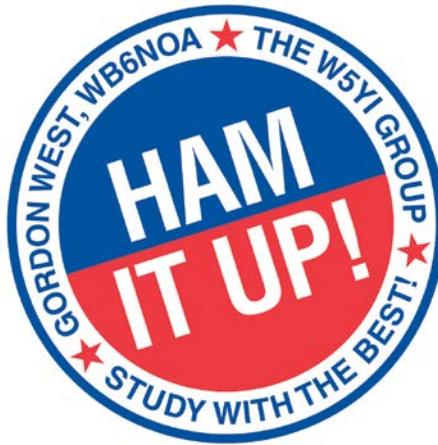
Getting Started in Electronics

By Forrest M. Mims III. This is a complete electronics course in 128 pages! This famous electronics inventor teaches you the basics, takes you on a tour of analog and digital components, explains how they work, and shows how they are combined for various applications. Includes circuit assembly tips and 100 electronic circuits you can build and test.

GSTD \$19.95

Special Offer: As a Gordo student, mention this PreStudy booklet when ordering and receive **FREE SHIPPING** on these items.

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