

Technician Exam Questions and Answers

SubElement	Section	ExamRef	Num	Content	Answer	Correct	ID
SUBELEMENT T1 FCC Rules, descriptions and definitions for the amateur radio service, operator and station license responsibilities - [6 Exam Questions - 6 Groups]	T1A - Amateur Radio services; purpose of the amateur service, amateur-satellite service, operator/primary station license grant, where FCC rules are codified, basis and purpose of FCC rules, meanings of basic terms used in FCC	T1A01	1	For whom is the Amateur Radio Service intended?	D		2855
				A. Persons who have messages to broadcast to the public			2856
				B. Persons who need communications for the activities of their immediate family members, relatives and friends			2857
				C. Persons who need two-way communications for personal reasons			2858
		D. Persons who are interested in radio technique solely with a personal aim and without pecuniary interest		Yes	2859		
		T1A02	2	What agency regulates and enforces the rules for the Amateur Radio Service in the United States?	C		2862
				A. FEMA			2863
				B. The ITU			2864
				C. The FCC		Yes	2865
		D. Homeland Security			2866		
		T1A03	3	Which part of the FCC rules contains the rules and regulations governing the Amateur Radio Service?	D		2869
				A. Part 73			2870
				B. Part 95			2871
				C. Part 90			2872
		D. Part 97		Yes	2873		
		T1A04	4	Which of the following meets the FCC definition of harmful interference?	C		2876
				A. Radio transmissions that annoy users of a repeater			2877
				B. Unwanted radio transmissions that cause costly harm to radio station apparatus			2878
				C. That which seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with the Radio Regulations		Yes	2879
		D. Static from lightning storms			2880		
		T1A05	5	What is the FCC Part 97 definition of a space station?	D		2883
				A. Any multi-stage satellite			2884
				B. An Earth satellite that carries one of more amateur operators			2885
				C. An amateur station located less than 25 km above the Earth's surface			2886
D. An amateur station located more than 50 km above the Earth's surface		Yes	2887				
T1A06	6	What is the FCC Part 97 definition of telecommand?	C		2890		
		A. An instruction bulletin issued by the FCC			2891		
		B. A one-way radio transmission of measurements at a distance from the measuring instrument			2892		
		C. A one-way transmission to initiate, modify or terminate functions of a device at a distance		Yes	2893		
D. An instruction from a VEC			2894				
T1A07	7	What is the FCC Part 97 definition of telemetry?	C		2897		
		A. An information bulletin issued by the FCC			2898		
		B. A one-way transmission to initiate, modify or terminate functions of a device at a distance			2899		
		C. A one-way transmission of measurements at a distance from the measuring instrument		Yes	2900		
D. An information bulletin from a VEC			2900				
T1A08	8	Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?	B		2903		
		A. Frequency Spectrum Manager			2904		
		B. Frequency Coordinator		Yes	2905		
		C. FCC Regional Field Office			2906		
D. International Telecommunications Union			2907				
T1A09	9	Who selects a Frequency Coordinator?	C		2910		
		A. The FCC Office of Spectrum Management and Coordination Policy			2911		
B. The local chapter of the Office of National Council of Independent Frequency Coordinators			2912				

Technician Exam Questions and Answers

				C. Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations		Yes	2913
				D. FCC Regional Field Office			2914
		T1A10	10	What is the FCC Part 97 definition of an amateur station?	A		2917
				A. A station in an Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications		Yes	2918
				B. A building where Amateur Radio receivers, transmitters, and RF power amplifiers are installed			2919
				C. Any radio station operated by a non-professional			2920
				D. Any radio station for hobby use			2921
		T1A11	11	Which of the following stations transmits signals over the air from a remote receive site to a repeater for retransmission?	C		2924
				A. Beacon station			2925
				B. Relay station			2926
				C. Auxiliary station		Yes	2927
				D. Message forwarding station			2928
	T1B - Authorized frequencies; frequency allocations, ITU regions, emission type, restricted sub-bands, spectrum sharing, transmissions near band edges	T1B01	12	What is the ITU?	B		2932
				A. An agency of the United States Department of Telecommunications Management			2933
				B. A United Nations agency for information and communication technology issues		Yes	2934
				C. An independent frequency coordination agency			2935
				D. A department of the FCC			2936
		T1B02	13	North American amateur stations are located in which ITU region?	B		2939
				A. Region 1			2940
				B. Region 2		Yes	2941
				C. Region 3			2942
				D. Region 4			2943
		T1B03	14	Which frequency is within the 6 meter band?	B		2946
				A. 49.00 MHz			2947
				B. 52.525 MHz		Yes	2948
				C. 28.50 MHz			2949
				D. 222.15 MHz			2950
		T1B04	15	Which amateur band are you using when your station is transmitting on 146.52 MHz?	A		2953
				A. 2 meter band		Yes	2954
				B. 20 meter band			2955
				C. 14 meter band			2956
				D. 6 meter band			2957
		T1B05	16	Which 70 cm frequency is authorized to a Technician Class license holder operating in ITU Region 2?	C		2960
				A. 53.350 MHz			2961
				B. 146.520 MHz			2962
				C. 443.350 MHz		Yes	2963
				D. 222.520 MHz			2964
		T1B06	17	Which 23 cm frequency is authorized to a Technician Class operator license?	B		2967
				A. 2315 MHz			2968
				B. 1296 MHz		Yes	2969
				C. 3390 MHz			2970
				D. 146.52 MHz			2971
		T1B07	18	What amateur band are you using if you are transmitting on 223.50 MHz?	D		2974
				A. 15 meter band			2975
				B. 10 meter band			2976
				C. 2 meter band			2977
				D. 1.25 meter band		Yes	2978
		T1B08	19	What do the FCC rules mean when an amateur frequency band is said to be available on a secondary basis?	C		2981
				A. Secondary users of a frequency have equal rights to operate			2982
				B. Amateurs are only allowed to use the frequency at night			2983

Technician Exam Questions and Answers

				C. Amateurs may not cause harmful interference to primary users		Yes	2984
				D. Secondary users are not allowed on amateur bands			2985
		T1B09	20	Why should you not set your transmit frequency to be exactly at the edge of an amateur band or sub-band?	D		2988
				A. To allow for calibration error in the transmitter frequency display			2989
				B. So that modulation sidebands do not extend beyond the band edge			2990
				C. To allow for transmitter frequency drift			2991
				D. All of these choices are correct		Yes	2992
		T1B10	21	Which of the bands available to Technician Class operators have mode-restricted sub-bands?	C		2995
				A. The 6 meter, 2 meter, and 70 cm bands			2996
				B. The 2 meter and 13 cm bands			2997
				C. The 6 meter, 2 meter, and 1.25 meter bands		Yes	2998
				D. The 2 meter and 70 cm bands			2999
		T1B11	22	What emission modes are permitted in the mode-restricted sub-bands at 50.0 to 50.1 MHz and 144.0 to 144.1 MHz?	A		3002
				A. CW only		Yes	3003
				B. CW and RTTY			3004
				C. SSB only			3005
				D. CW and SSB			3006
	T1C - Operator classes and station call signs; operator classes, sequential, special event, and vanity call sign systems, international communications, reciprocal operation, station license and licensee, places where the amateur service is regulated by th	T1C01	23	Which type of call sign has a single letter in both the prefix and suffix?	C		3010
				A. Vanity			3011
				B. Sequential			3012
				C. Special event		Yes	3013
				D. In-memoriam			3014
		T1C02	24	Which of the following is a valid US amateur radio station call sign?	B		3017
				A. KMA3505			3018
				B. W3ABC		Yes	3019
				C. KDKA			3020
				D. 11Q1176			3021
		T1C03	25	What types of international communications are permitted by an FCC-licensed amateur station?	A		3024
				A. Communications incidental to the purposes of the amateur service and remarks of a personal character		Yes	3025
				B. Communications incidental to conducting business or remarks of a personal nature			3026
				C. Only communications incidental to contest exchanges, all other communications are prohibited			3027
				D. Any communications that would be permitted on an international broadcast station			3028
		T1C04	26	When are you allowed to operate your amateur station in a foreign country?	A		3031
				A. When the foreign country authorizes it		Yes	3032
				B. When there is a mutual agreement allowing third party communications			3033
				C. When authorization permits amateur communications in a foreign language			3034
				D. When you are communicating with non-licensed individuals in another country			3035
		T1C05	27	What must you do if you are operating on the 23 cm band and learn that you are interfering with a radio location station outside the United States?	A		3038
				A. Stop operating or take steps to eliminate the harmful interference		Yes	3039
				B. Nothing, because this band is allocated exclusively to the amateur service			3040
				C. Establish contact with the radiolocation station and ask them to change frequency			3041
				D. Change to CW mode, because this would not likely cause interference			3042

Technician Exam Questions and Answers

		T1C06	28	From which of the following may an FCC-licensed amateur station transmit, in addition to places where the FCC regulates communications?	D		3045
				A. From within any country that belongs to the International Telecommunications Union			3046
				B. From within any country that is a member of the United Nations			3047
				C. From anywhere within in ITU Regions 2 and 3			3048
				D. From any vessel or craft located in international waters and documented or registered in the United States		Yes	3049
		T1C07	29	What may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct mailing address?	B		3052
				A. Fine or imprisonment			3053
				B. Revocation of the station license or suspension of the operator license		Yes	3054
				C. Require the licensee to be re-examined			3055
				D. A reduction of one rank in operator class			3056
		T1C08	30	What is the normal term for an FCC-issued primary station/operator license grant?	C		3059
				A. Five years			3060
				B. Life			3061
				C. Ten years		Yes	3062
				D. Twenty years			3063
		T1C09	31	What is the grace period following the expiration of an amateur license within which the license may be renewed?	A		3066
				A. Two years		Yes	3067
				B. Three years			3068
				C. Five years			3069
				D. Ten years			3070
		T1C10	32	How soon may you operate a transmitter on an amateur service frequency after you pass the examination required for your first amateur radio license?	C		3073
				A. Immediately			3074
				B. 30 days after the test date			3075
				C. As soon as your name and call sign appear in the FCC's ULS database		Yes	3076
				D. You must wait until you receive your license in the mail from the FCC			3077
		T1C11	33	If your license has expired and is still within the allowable grace period, may you continue to operate a transmitter on amateur service frequencies?	A		3080
				A. No, transmitting is not allowed until the ULS database shows that the license has been renewed		Yes	3081
				B. Yes, but only if you identify using the suffix "GP"			3082
				C. Yes, but only during authorized nets			3083
				D. Yes, for up to two years			3084
	T1D - Authorized and prohibited transmissions	T1D01	34	With which countries are FCC-licensed amateur stations prohibited from exchanging communications?	A		3088
				A. Any country whose administration has notified the ITU that it objects to such communications		Yes	3089
				B. Any country whose administration has notified the United Nations that it objects to such communications			3090
				C. Any country engaged in hostilities with another country			3091
				D. Any country in violation of the War Powers Act of 1934			3092
		T1D02	35	On which of the following occasions may an FCC-licensed amateur station exchange messages with a U.S. military station?	A		3095
				A. During an Armed Forces Day Communications Test		Yes	3096
				B. During a Memorial Day Celebration			3097
				C. During an Independence Day celebration			3098
				D. During a propagation test			3099
		T1D03	36	When is the transmission of codes or ciphers allowed to hide the meaning of a message transmitted by an amateur station?	C		3102
				A. Only during contests			3103
				B. Only when operating mobile			3104

Technician Exam Questions and Answers

				C. Only when transmitting control commands to space stations or radio control craft		Yes	3105
				D. Only when frequencies above 1280 MHz are used			3106
		T1D04	37	What is the only time an amateur station is authorized to transmit music?	A		3109
				A. When incidental to an authorized retransmission of manned spacecraft communications		Yes	3110
				B. When the music produces no spurious emissions			3111
				C. When the purpose is to interfere with an illegal transmission			3112
				D. When the music is transmitted above 1280 MHz			3113
		T1D05	38	When may amateur radio operators use their stations to notify other amateurs of the availability of equipment for sale or trade?	A		3116
				A. When the equipment is normally used in an amateur station and such activity is not conducted on a regular basis		Yes	3117
				B. When the asking price is \$100.00 or less			3118
				C. When the asking price is less than its appraised value			3119
				D. When the equipment is not the personal property of either the station licensee or the control operator or their close relatives			3120
		T1D06	39	Which of the following types of transmissions are prohibited?	A		3123
				A. Transmissions that contain obscene or indecent words or language		Yes	3124
				B. Transmissions to establish one-way communications			3125
				C. Transmissions to establish model aircraft control			3126
				D. Transmissions for third party communications			3127
		T1D07	40	When is an amateur station authorized to automatically retransmit the radio signals of other amateur stations?	B		3130
				A. When the signals are from an auxiliary, beacon, or Earth station			3131
				B. When the signals are from an auxiliary, repeater, or space station		Yes	3132
				C. When the signals are from a beacon, repeater, or space station			3133
				D. When the signals are from an Earth, repeater, or space station			3134
		T1D08	41	When may the control operator of an amateur station receive compensation for operating the station?	B		3137
				A. When engaging in communications on behalf of their employer			3138
				B. When the communication is incidental to classroom instruction at an educational institution		Yes	3139
				C. When re-broadcasting weather alerts during a RACES net			3140
				D. When notifying other amateur operators of the availability for sale or trade of apparatus			3141
		T1D09	42	Under which of the following circumstances are amateur stations authorized to transmit signals related to broadcasting, program production, or news gathering, assuming no other means is available?	A		3144
				A. Only where such communications directly relate to the immediate safety of human life or protection of property		Yes	3145
				B. Only when broadcasting communications to or from the space shuttle.			3146
				C. Only where noncommercial programming is gathered and supplied exclusively to the National Public Radio network			3147
				D. Only when using amateur repeaters linked to the Internet			3148
		T1D10	43	What is the meaning of the term broadcasting in the FCC rules for the amateur services?	D		3151
				A. Two-way transmissions by amateur stations			3152
				B. Transmission of music			3153
				C. Transmission of messages directed only to amateur operators			3154
				D. Transmissions intended for reception by the general public		Yes	3155
		T1D11	44	Which of the following types of communications are permitted in the Amateur Radio Service?	A		3158
				A. Brief transmissions to make station adjustments		Yes	3159

Technician Exam Questions and Answers

				B. Retransmission of entertainment programming from a commercial radio or TV station			3160
				C. Retransmission of entertainment material from a public radio or TV station			3161
				D. Communications on a regular basis that could reasonably be furnished alternatively through other radio services			3162
	T1E - Control operator and control types; control operator required, eligibility, designation of control operator, privileges and duties, control point, local, automatic and remote control, location of control	T1E01	45	When must an amateur station have a control operator?	A		3166
				A. Only when the station is transmitting		Yes	3167
				B. Only when the station is being locally controlled			3168
				C. Only when the station is being remotely controlled			3169
				D. Only when the station is being automatically controlled			3170
		T1E02	46	Who is eligible to be the control operator of an amateur station?	D		3173
				A. Only a person holding an amateur service license from any country that belongs to the United Nations			3174
				B. Only a citizen of the United States			3175
				C. Only a person over the age of 18			3176
				D. Only a person for whom an amateur operator/primary station license grant appears in the FCC database or who is authorized for alien reciprocal operation		Yes	3177
		T1E03	47	Who must designate the station control operator?	A		3180
				A. The station licensee		Yes	3181
				B. The FCC			3182
				C. The frequency coordinator			3183
				D. The ITU			3184
		T1E04	48	What determines the transmitting privileges of an amateur station?	D		3187
				A. The frequency authorized by the frequency coordinator			3188
				B. The class of operator license held by the station licensee			3189
				C. The highest class of operator license held by anyone on the premises			3190
				D. The class of operator license held by the control operator		Yes	3191
		T1E05	49	What is an amateur station control point?	C		3194
				A. The location of the station's transmitting antenna			3195
				B. The location of the station transmitting apparatus			3196
				C. The location at which the control operator function is performed		Yes	3197
				D. The mailing address of the station licensee			3198
		T1E06	50	Under which of the following types of control is it permissible for the control operator to be at a location other than the control point?	B		3201
				A. Local control			3202
				B. Automatic control		Yes	3203
				C. Remote control			3204
				D. Indirect control			3205
		T1E07	51	When the control operator is not the station licensee, who is responsible for the proper operation of the station?	D		3208
				A. All licensed amateurs who are present at the operation			3209
				B. Only the station licensee			3210
				C. Only the control operator			3211
				D. The control operator and the station licensee are equally responsible		Yes	3212
		T1E08	52	What type of control is being used for a repeater when the control operator is not present at a control point?	C		3215
				A. Local control			3216
				B. Remote control			3217
				C. Automatic control		Yes	3218
				D. Unattended			3219
		T1E09	53	What type of control is being used when transmitting using a handheld radio?	D		3222

Technician Exam Questions and Answers

				A. Radio control			3223
				B. Unattended control			3224
				C. Automatic control			3225
				D. Local control		Yes	3226
		T1E10	54	What type of control is used when the control operator is not at the station location but can indirectly manipulate the operating adjustments of a station?	B		3229
				A. Local			3230
				B. Remote		Yes	3231
				C. Automatic			3232
				D. Unattended			3233
		T1E11	55	Who does the FCC presume to be the control operator of an amateur station, unless documentation to the contrary is in the station records?	D		3236
				A. The station custodian			3237
				B. The third party participant			3238
				C. The person operating the station equipment			3239
				D. The station licensee		Yes	3240
	T1F - Station identification and operation standards; special operations for repeaters and auxiliary stations, third party communications, club stations, station security, FCC inspection	T1F01	56	What type of identification is being used when identifying a station on the air as 'Race Headquarters'?	A		3244
				A. Tactical call		Yes	3245
				B. Self-assigned designator			3246
				C. SSID			3247
				D. Broadcast station			3248
		T1F02	57	When using tactical identifiers, how often must your station transmit the station's FCC-assigned call sign?	C		3251
				A. Never, the tactical call is sufficient			3252
				B. Once during every hour			3253
				C. Every ten minutes		Yes	3254
				D. At the end of every communication			3255
		T1F03	58	When is an amateur station required to transmit its assigned call sign?	D		3258
				A. At the beginning of each contact, and every 10 minutes thereafter			3259
				B. At least once during each transmission			3260
				C. At least every 15 minutes during and at the end of a contact			3261
				D. At least every 10 minutes during and at the end of a contact		Yes	3262
		T1F04	59	Which of the following is an acceptable language for use for station identification when operating in a phone sub-band?	C		3265
				A. Any language recognized by the United Nations			3266
				B. Any language recognized by the ITU			3267
				C. The English language		Yes	3268
				D. English, French, or Spanish			3269
		T1F05	60	What method of call sign identification is required for a station transmitting phone signals?	B		3272
				A. Send the call sign followed by the indicator RPT			3273
				B. Send the call sign using CW or phone emission		Yes	3274
				C. Send the call sign followed by the indicator R			3275
				D. Send the call sign using only phone emission			3276
		T1F06	61	Which of the following formats of a self-assigned indicator is acceptable when identifying using a phone transmission?	D		3279
				A. KL7CC stroke W3			3280
				B. KL7CC slant W3			3281
				C. KL7CC slash W3			3282
				D. All of these choices are correct		Yes	3283
		T1F07	62	Which of the following restrictions apply when appending a self-assigned call sign indicator?	D		3286
				A. It must be more than three letters and less than five letters			3287
				B. It must be less than five letters			3288
				C. It must start with the letters AA through AL, K, N, or W and be not less than two characters or more than five characters in length			3289

Technician Exam Questions and Answers

				D. It must not conflict with any other indicator specified by the FCC rules or with any call sign prefix assigned to another country		Yes	3290
		T1F08	63	When may a Technician Class licensee be the control operator of a station operating in an exclusive Extra Class operator segment of the amateur bands?	A		3293
				A. Never		Yes	3294
				B. On Armed Forces Day			3295
				C. As part of a multi-operator contest team			3296
				D. When using a club station whose trustee is an Extra Class operator licensee			3297
		T1F09	64	What type of amateur station simultaneously retransmits the signal of another amateur station on a different channel or channels?	C		3300
				A. Beacon station			3301
				B. Earth station			3302
				C. Repeater station		Yes	3303
				D. Message forwarding station			3304
		T1F10	65	Who is accountable should a repeater inadvertently retransmit communications that violate the FCC rules?	A		3307
				A. The control operator of the originating station		Yes	3308
				B. The control operator of the repeater			3309
				C. The owner of the repeater			3310
				D. Both the originating station and the repeater owner			3311
		T1F11	66	To which foreign stations do the FCC rules authorize the transmission of non-emergency third party communications?	A		3314
				A. Any station whose government permits such communications		Yes	3315
				B. Those in ITU Region 2 only			3316
				C. Those in ITU Regions 2 and 3 only			3317
				D. Those in ITU Region 3 only			3318
		T1F12	67	How many persons are required to be members of a club for a club station license to be issued by the FCC?	B		3321
				A. At least 5			3322
				B. At least 4		Yes	3323
				C. A trustee and 2 officers			3324
				D. At least 2			3325
		T1F13	68	When must the station licensee make the station and its records available for FCC inspection?	B		3328
				A. Any time upon request by an official observer			3329
				B. Any time upon request by an FCC representative		Yes	3330
				C. 30 days prior to renewal of the station license			3331
				D. 10 days before the first transmission			3332
SUBELEMENT T2 - Operating Procedures [3 Exam Questions - 3 Groups]	T2A - Station operation; choosing an operating frequency, calling another station, test transmissions, use of minimum power, frequency use, band plans	T2A01	69	What is the most common repeater frequency offset in the 2 meter band?	B		3337
				A. plus 500 kHz			3338
				B. plus or minus 600 kHz		Yes	3339
				C. minus 500 kHz			3340
				D. Only plus 600 kHz			3341
		T2A02	70	What is the national calling frequency for FM simplex operations in the 70 cm band?	D		3344
				A. 146.520 MHz			3345
				B. 145.000 MHz			3346
				C. 432.100 MHz			3347
				D. 446.000 MHz		Yes	3348
		T2A03	71	What is a common repeater frequency offset in the 70 cm band?	A		3351
				A. Plus or minus 5 MHz		Yes	3352
				B. Plus or minus 600 kHz			3353
				C. Minus 600 kHz			3354
				D. Plus 600 kHz			3355
		T2A04	72	What is an appropriate way to call another station on a repeater if you know the other station's call sign?	B		3358
				A. Say "break, break" then say the station's call sign			3359
				B. Say the station's call sign then identify with your call sign		Yes	3360



Technician Exam Questions and Answers

				C. Say "CQ" three times then the other station's call sign			3361
				D. Wait for the station to call "CQ" then answer it			3362
		T2A05	73	What should you transmit when responding to a call of CQ?	C		3365
				A. CQ followed by the other station's call sign			3366
				B. Your call sign followed by the other station's call sign			3367
				C. The other station's call sign followed by your call sign		Yes	3368
				D. A signal report followed by your call sign			3369
		T2A06	74	What must an amateur operator do when making on-air transmissions to test equipment or antennas?	A		3372
				A. Properly identify the transmitting station		Yes	3373
				B. Make test transmissions only after 10:00 p.m. local time			3374
				C. Notify the FCC of the test transmission			3375
				D. State the purpose of the test during the test procedure			3376
		T2A07	75	Which of the following is true when making a test transmission?	D		3379
				A. Station identification is not required if the transmission is less than 15 seconds			3380
				B. Station identification is not required if the transmission is less than 1 watt			3381
				C. Station identification is required only if your station can be heard			3382
				D. Station identification is required at least every ten minutes during the test and at the end		Yes	3383
		T2A08	76	What is the meaning of the procedural signal "CQ"?	D		3386
				A. Call on the quarter hour			3387
				B. A new antenna is being tested (no station should answer)			3388
				C. Only the called station should transmit			3389
				D. Calling any station		Yes	3390
		T2A09	77	What brief statement is often used in place of "CQ" to indicate that you are listening on a repeater?	B		3393
				A. Say "Hello test" followed by your call sign			3394
				B. Say your call sign		Yes	3395
				C. Say the repeater call sign followed by your call sign			3396
				D. Say the letters "QSY" followed by your call sign			3397
		T2A10	78	What is a band plan, beyond the privileges established by the FCC?	A		3400
				A. A voluntary guideline for using different modes or activities within an amateur band		Yes	3401
				B. A mandated list of operating schedules			3402
				C. A list of scheduled net frequencies			3403
				D. A plan devised by a club to use a frequency band during a contest			3404
		T2A11	79	What are the FCC rules regarding power levels used in the amateur bands?	D		3407
				A. Always use the maximum power allowed to ensure that you complete the contact			3408
				B. An amateur may use no more than 200 watts PEP to make an amateur contact			3409
				C. An amateur may use up to 1500 watts PEP on any amateur frequency			3410
				D. An amateur must use the minimum transmitter power necessary to carry out the desired communication		Yes	3411
							3415
		T2B01	80	What is the term used to describe an amateur station that is transmitting and receiving on the same frequency?	C		3416
				A. Full duplex communication			3416
				B. Duplex communication			3417
				C. Simplex communication		Yes	3418
				D. Half duplex communication			3419
		T2B02	81	What is the term used to describe the use of a sub-audible tone transmitted with normal voice audio to open the squelch of a receiver?	D		3422
				A. Carrier squelch			3423
				B. Tone burst			3424
				C. DTMF			3425
				D. CTCSS		Yes	3426

Technician Exam Questions and Answers

		T2B03	82	Which of the following describes the muting of receiver audio controlled solely by the presence or absence of an RF signal?	B		3429
				A. Tone squelch			3430
				B. Carrier squelch		Yes	3431
				C. CTCSS			3432
				D. Modulated carrier			3433
		T2B04	83	Which of the following common problems might cause you to be able to hear but not access a repeater even when transmitting with the proper offset?	D		3436
				A. The repeater receiver requires audio tone burst for access			3437
				B. The repeater receiver requires a CTCSS tone for access			3438
				C. The repeater receiver may require a DCS tone sequence for access			3439
				D. All of these choices are correct		Yes	3440
		T2B05	84	What determines the amount of deviation of an FM signal?	C		3443
				A. Both the frequency and amplitude of the modulating signal			3444
				B. The frequency of the modulating signal			3445
				C. The amplitude of the modulating signal		Yes	3446
				D. The relative phase of the modulating signal and the carrier			3447
		T2B06	85	What happens when the deviation of an FM transmitter is increased?	A		3450
				A. Its signal occupies more bandwidth		Yes	3451
				B. Its output power increases			3452
				C. Its output power and bandwidth increases			3453
				D. Asymmetric modulation occurs			3454
		T2B07	86	What should you do if you receive a report that your station's transmissions are causing splatter or interference on nearby frequencies?	D		3457
				A. Increase transmit power			3458
				B. Change mode of transmission			3459
				C. Report the interference to the equipment manufacturer			3460
				D. Check your transmitter for off-frequency operation or spurious emissions		Yes	3461
		T2B08	87	What is the proper course of action if your station's transmission unintentionally interferes with another station?	B		3464
				A. Rotate your antenna slightly			3465
				B. Properly identify your transmission and move to a different frequency		Yes	3466
				C. Increase power			3467
				D. Change antenna polarization			3468
		T2B09	88	Which of the following methods is encouraged by the FCC when identifying your station when using phone?	A		3471
				A. Use of a phonetic alphabet		Yes	3472
				B. Send your call sign in CW as well as voice			3473
				C. Repeat your call sign three times			3474
				D. Increase your signal to full power when identifying			3475
		T2B10	89	What is the "Q" signal used to indicate that you are receiving interference from other stations?	A		3478
				A. QRM		Yes	3479
				B. QRN			3480
				C. QTH			3481
				D. QSB			3482
		T2B11	90	What is the "Q" signal used to indicate that you are changing frequency?	B		3485
				A. QRU			3486
				B. QSY		Yes	3487
				C. QSL			3488
				D. QRZ			3489
	T2C Public service; emergency and non-emergency operations, message traffic handling	T2C01	91	What set of rules applies to proper operation of your station when using amateur radio at the request of public service officials?	C		3493
				A. RACES Rules			3494
				B. ARES Rules			3495
				C. FCC Rules		Yes	3496
				D. FEMA Rules			3497

Technician Exam Questions and Answers

	T2C04	92	What do RACES and ARES have in common?	D		3514
			A. They represent the two largest ham clubs in the United States			3515
			B. Both organizations broadcast road and weather traffic information			3516
			C. Neither may handle emergency traffic supporting public service agencies			3517
			D. Both organizations may provide communications during emergencies	Yes		3518
	T2C05	93	What is the Radio Amateur Civil Emergency Service?	B		3521
			A. An emergency radio service organized by amateur operators			3522
			B. A radio service using amateur stations for emergency management or civil defense communications	Yes		3523
			C. A radio service organized to provide communications at civic events			3524
			D. A radio service organized by amateur operators to assist non-military persons			3525
	T2C06	94	Which of the following is common practice during net operations to get the immediate attention of the net control station when reporting an emergency?	C		3528
			A. Repeat the words SOS three times followed by the call sign of the reporting station			3529
			B. Press the push-to-talk button three times			3530
			C. Begin your transmission with "Priority" or "Emergency" followed by your call sign	Yes		3531
			D. Play a pre-recorded emergency alert tone followed by your call sign			3532
	T2C07	95	What should you do to minimize disruptions to an emergency traffic net once you have checked in?	C		3535
			A. Whenever the net frequency is quiet, announce your call sign and location			3536
			B. Move 5 kHz away from the net's frequency and use high power to ask other hams to keep clear of the net frequency			3537
			C. Do not transmit on the net frequency until asked to do so by the net control station	Yes		3538
			D. Wait until the net frequency is quiet, then ask for any emergency traffic for your area			3539
	T2C08	96	What is usually considered to be the most important job of an amateur operator when handling emergency traffic messages?	A		3542
			A. Passing messages exactly as written, spoken or as received	Yes		3543
			B. Estimating the number of people affected by the disaster			3544
			C. Communicating messages to the news media for broadcast outside the disaster area			3545
			D. Broadcasting emergency information to the general public			3546
	T2C09	97	When may an amateur station use any means of radio communications at its disposal for essential communications in connection with immediate safety of human life and protection of property?	B		3549
			A. Only when FEMA authorizes it by declaring an emergency			3550
			B. When normal communications systems are not available	Yes		3551
			C. Only when RACES authorizes it by declaring an emergency			3552
			D. Only when authorized by the local MARS program director			3553
	T2C10	98	What is the preamble in a formal traffic message?	D		3556
			A. The first paragraph of the message text			3557
			B. The message number			3558
			C. The priority handling indicator for the message			3559
			D. The information needed to track the message as it passes through the amateur radio traffic handling system	Yes		3560
	T2C11	99	What is meant by the term "check" in reference to a formal traffic message?	A		3563
			A. The check is a count of the number of words or word equivalents in the text portion of the message	Yes		3564
			B. The check is the value of a money order attached to the message			3565
			C. The check is a list of stations that have relayed the message			3566
			D. The check is a box on the message form that tells you the message was received			3567

Technician Exam Questions and Answers

SUBELEMENT T3 Radio wave characteristics, radio and electromagnetic properties, propagation modes [3 Exam Questions - 3 Groups]	T3A - Radio wave characteristics; how a radio signal travels; distinctions of HF, VHF and UHF; fading, multipath; wavelength vs. penetration; antenna orientation	T3A01	100	What should you do if another operator reports that your station's 2 meter signals were strong just a moment ago, but now they are weak or distorted?	D		3572
				A. Change the batteries in your radio to a different type		3573	
				B. Turn on the CTCSS tone		3574	
				C. Ask the other operator to adjust his squelch control		3575	
				D. Try moving a few feet, as random reflections may be causing multi-path distortion	Yes	3576	
		T3A02	101	Why are UHF signals often more effective from inside buildings than VHF signals?	B		3579
	A. VHF signals lose power faster over distance				3580		
	B. The shorter wavelength allows them to more easily penetrate the structure of buildings			Yes	3581		
	C. This is incorrect; VHF works better than UHF inside buildings				3582		
				D. UHF antennas are more efficient than VHF antennas		3583	
		T3A03	102	What antenna polarization is normally used for long-distance weak-signal CW and SSB contacts using the VHF and UHF bands?	C		3586
	A. Right-hand circular				3587		
	B. Left-hand circular				3588		
	C. Horizontal			Yes	3589		
				D. Vertical		3590	
		T3A04	103	What can happen if the antennas at opposite ends of a VHF or UHF line of sight radio link are not using the same polarization?	B		3593
	A. The modulation sidebands might become inverted				3594		
	B. Signals could be significantly weaker			Yes	3595		
	C. Signals have an echo effect on voices				3596		
				D. Nothing significant will happen		3597	
		T3A05	104	When using a directional antenna, how might your station be able to access a distant repeater if buildings or obstructions are blocking the direct line of sight path?	B		3600
	A. Change from vertical to horizontal polarization				3601		
	B. Try to find a path that reflects signals to the repeater			Yes	3602		
	C. Try the long path				3603		
				D. Increase the antenna SWR		3604	
		T3A06	105	What term is commonly used to describe the rapid fluttering sound sometimes heard from mobile stations that are moving while transmitting?	B		3607
	A. Flip-flopping				3608		
	B. Picket fencing			Yes	3609		
	C. Frequency shifting				3610		
				D. Pulsing		3611	
		T3A07	106	What type of wave carries radio signals between transmitting and receiving stations?	A		3614
	A. Electromagnetic			Yes	3615		
	B. Electrostatic				3616		
	C. Surface acoustic				3617		
				D. Magnetostrictive		3618	
		T3A08	107	What is the cause of irregular fading of signals from distant stations during times of generally good reception?	C		3621
	A. Absorption of signals by the "D" layer of the ionosphere				3622		
	B. Absorption of signals by the "E" layer of the ionosphere				3623		
	C. Random combining of signals arriving via different path lengths			Yes	3624		
				D. Intermodulation distortion in the local receiver		3625	
		T3A09	108	Which of the following is a common effect of "skip" reflections between the Earth and the ionosphere?	B		3628
	A. The sidebands become reversed at each reflection				3629		
	B. The polarization of the original signal is randomized			Yes	3630		
	C. The apparent frequency of the received signal is shifted by a random amount				3631		
				D. Signals at frequencies above 30 MHz become stronger with each reflection		3632	

Technician Exam Questions and Answers

		T3A10	109	What may occur if VHF or UHF data signals propagate over multiple paths?	D		3635
				A. Transmission rates can be increased by a factor equal to the number of separate paths observed			3636
				B. Transmission rates must be decreased by a factor equal to the number of separate paths observed			3637
				C. No significant changes will occur if the signals are transmitting using FM			3638
				D. Error rates are likely to increase		Yes	3639
		T3A11	110	Which part of the atmosphere enables the propagation of radio signals around the world?	C		3642
				A. The stratosphere			3643
				B. The troposphere			3644
				C. The ionosphere		Yes	3645
				D. The magnetosphere			3646
	T3B - Radio and electromagnetic wave properties; the electromagnetic spectrum, wavelength vs. frequency, velocity of electromagnetic waves	T3B01	111	What is the name for the distance a radio wave travels during one complete cycle?	C		3650
				A. Wave speed			3651
				B. Waveform			3652
				C. Wavelength		Yes	3653
				D. Wave spread			3654
		T3B02	112	What term describes the number of times per second that an alternating current reverses direction?	D		3657
				A. Pulse rate			3658
				B. Speed			3659
				C. Wavelength			3660
				D. Frequency		Yes	3661
		T3B03	113	What are the two components of a radio wave?	C		3664
				A. AC and DC			3665
				B. Voltage and current			3666
				C. Electric and magnetic fields		Yes	3667
				D. Ionizing and non-ionizing radiation			3668
		T3B04	114	How fast does a radio wave travel through free space?	A		3671
				A. At the speed of light		Yes	3672
				B. At the speed of sound			3673
				C. Its speed is inversely proportional to its wavelength			3674
				D. Its speed increases as the frequency increases			3675
		T3B05	115	How does the wavelength of a radio wave relate to its frequency?	B		3678
				A. The wavelength gets longer as the frequency increases			3679
				B. The wavelength gets shorter as the frequency increases		Yes	3680
				C. There is no relationship between wavelength and frequency			3681
				D. The wavelength depends on the bandwidth of the signal			3682
		T3B06	116	What is the formula for converting frequency to wavelength in meters?	D		3685
				A. Wavelength in meters equals frequency in hertz multiplied by 300			3686
				B. Wavelength in meters equals frequency in hertz divided by 300			3687
				C. Wavelength in meters equals frequency in megahertz divided by 300			3688
				D. Wavelength in meters equals 300 divided by frequency in megahertz		Yes	3689
		T3B07	117	What property of radio waves is often used to identify the different frequency bands?	A		3692
				A. The approximate wavelength		Yes	3693
				B. The magnetic intensity of waves			3694
				C. The time it takes for waves to travel one mile			3695
				D. The voltage standing wave ratio of waves			3696
		T3B08	118	What are the frequency limits of the VHF spectrum?	B		3699
				A. 30 to 300 kHz			3700
				B. 30 to 300 MHz		Yes	3701
				C. 300 to 3000 kHz			3702
				D. 300 to 3000 MHz			3703
		T3B09	119	What are the frequency limits of the UHF spectrum?	D		3706
				A. 30 to 300 kHz			3707

Technician Exam Questions and Answers

				B. 30 to 300 MHz			3708
				C. 300 to 3000 kHz			3709
				D. 300 to 3000 MHz		Yes	3710
		T3B10	120	What frequency range is referred to as HF?	C		3713
				A. 300 to 3000 MHz			3714
				B. 30 to 300 MHz			3715
				C. 3 to 30 MHz		Yes	3716
				D. 300 to 3000 kHz			3717
		T3B11	121	What is the approximate velocity of a radio wave as it travels through free space?	B		3720
				A. 3000 kilometers per second			3721
				B. 300,000,000 meters per second		Yes	3722
				C. 300,000 miles per hour			3723
				D. 186,000 miles per hour			3724
	T3C - Propagation modes; line of sight, sporadic E, meteor, aurora scatter, tropospheric ducting, F layer skin, radio horizon	T3C01	122	Why are "direct" (not via a repeater) UHF signals rarely heard from stations outside your local coverage area?	C		3728
				A. They are too weak to go very far			3729
				B. FCC regulations prohibit them from going more than 50 miles			3730
				C. UHF signals are usually not reflected by the ionosphere		Yes	3731
				D. They collide with trees and shrubbery and fade out			3732
		T3C02	123	Which of the following might be happening when VHF signals are being received from long distances?	D		3735
				A. Signals are being reflected from outer space			3736
				B. Signals are arriving by sub-surface ducting			3737
				C. Signals are being reflected by lightning storms in your area			3738
				D. Signals are being refracted from a sporadic E layer		Yes	3739
		T3C03	124	What is a characteristic of VHF signals received via auroral reflection?	B		3742
				A. Signals from distances of 10,000 or more miles are common			3743
				B. The signals exhibit rapid fluctuations of strength and often sound distorted		Yes	3744
				C. These types of signals occur only during winter nighttime hours			3745
				D. These types of signals are generally strongest when your antenna is aimed to the south (for stations in the Northern Hemisphere)			3746
		T3C04	125	Which of the following propagation types is most commonly associated with occasional strong over-the-horizon signals on the 10, 6, and 2 meter bands?	B		3749
				A. Backscatter			3750
				B. Sporadic E		Yes	3751
				C. D layer absorption			3752
				D. Gray-line propagation			3753
		T3C05	126	What is meant by the term "knife-edge" propagation?	C		3756
				A. Signals are reflected back toward the originating station at acute angles			3757
				B. Signals are sliced into several discrete beams and arrive via different paths			3758
				C. Signals are partially refracted around solid objects exhibiting sharp edges		Yes	3759
				D. Signals propagated close to the band edge exhibiting a sharp cutoff			3760
		T3C06	127	What mode is responsible for allowing over-the-horizon VHF and UHF communications to ranges of approximately 300 miles on a regular basis?	A		3763
				A. Tropospheric scatter		Yes	3764
				B. D layer refraction			3765
				C. F2 layer refraction			3766
				D. Faraday rotation			3767
		T3C07	128	What band is best suited to communicating via meteor scatter?	B		3770
				A. 10 meters			3771
				B. 6 meters		Yes	3772
				C. 2 meters			3773
				D. 70 cm			3774
		T3C08	129	What causes "tropospheric ducting"?	D		3777
				A. Discharges of lightning during electrical storms			3778

Technician Exam Questions and Answers

				B. Sunspots and solar flares			3779
				C. Updrafts from hurricanes and tornadoes			3780
				D. Temperature inversions in the atmosphere		Yes	3781
		T3C09	130	What is generally the best time for long-distance 10 meter band propagation?	A		3784
				A. During daylight hours		Yes	3785
				B. During nighttime hours			3786
				C. When there are coronal mass ejections			3787
				D. Whenever the solar flux is low			3788
		T3C10	131	What is the radio horizon?	A		3791
				A. The distance at which radio signals between two points are effectively blocked by the curvature of the Earth		Yes	3792
				B. The distance from the ground to a horizontally mounted antenna			3793
				C. The farthest point you can see when standing at the base of your antenna tower			3794
				D. The shortest distance between two points on the Earth's surface			3795
		T3C11	132	Why do VHF and UHF radio signals usually travel somewhat farther than the visual line of sight distance between two stations?	C		3798
				A. Radio signals move somewhat faster than the speed of light			3799
				B. Radio waves are not blocked by dust particles			3800
				C. The Earth seems less curved to radio waves than to light		Yes	3801
				D. Radio waves are blocked by dust particles			3802
SUBELEMENT T4 - Amateur radio practices and station set up [2 Exam Questions - 2 Groups]	T4A Station setup; microphone, speaker, headphones, filters, power source, connecting a computer, RF grounding	T4A01	133	Which of the following is true concerning the microphone connectors on amateur transceivers?	B		3807
				A. All transceivers use the same microphone connector type			3808
				B. Some connectors include push-to-talk and voltages for powering the microphone		Yes	3809
				C. All transceivers using the same connector type are wired identically			3810
				D. Un-keyed connectors allow any microphone to be connected			3811
		T4A02	134	What could be used in place of a regular speaker to help you copy signals in a noisy area?	C		3814
				A. A video display			3815
				B. A low pass filter			3816
				C. A set of headphones		Yes	3817
				D. A boom microphone			3818
		T4A03	135	Which is a good reason to use a regulated power supply for communications equipment?	A		3821
				A. It prevents voltage fluctuations from reaching sensitive circuits		Yes	3822
				B. A regulated power supply has FCC approval			3823
				C. A fuse or circuit breaker regulates the power			3824
				D. Power consumption is independent of load			3825
		T4A04	136	Where must a filter be installed to reduce harmonic emissions?	A		3828
				A. Between the transmitter and the antenna		Yes	3829
				B. Between the receiver and the transmitter			3830
				C. At the station power supply			3831
				D. At the microphone			3832
		T4A05	137	What type of filter should be connected to a TV receiver as the first step in trying to prevent RF overload from a nearby 2 meter transmitter?	D		3835
				A. Low-pass filter			3836
				B. High-pass filter			3837
				C. Band-pass filter			3838
				D. Band-reject filter		Yes	3839
		T4A06	138	Which of the following would be connected between a transceiver and computer in a packet radio station?	C		3842
				A. Transmatch			3843
				B. Mixer			3844
				C. Terminal node controller		Yes	3845
				D. Antenna			3846
		T4A07	139	How is the computer's sound card used when conducting digital communications using a computer?	C		3849

Technician Exam Questions and Answers

				A. The sound card communicates between the computer CPU and the video display			3850
				B. The sound card records the audio frequency for video display			3851
				C. The sound card provides audio to the microphone input and converts received audio to digital form		Yes	3852
				D. All of these choices are correct			3853
		T4A08	140	Which type of conductor is best to use for RF grounding?	D		3856
				A. Round stranded wire			3857
				B. Round copper-clad steel wire			3858
				C. Twisted-pair cable			3859
				D. Flat strap		Yes	3860
		T4A09	141	Which would you use to reduce RF current flowing on the shield of an audio cable?	D		3863
				A. Band-pass filter			3864
				B. Low-pass filter			3865
				C. Preampifier			3866
				D. Ferrite choke		Yes	3867
		T4A10	142	What is the source of a high-pitched whine that varies with engine speed in a mobile transceiver's receive audio?	B		3870
				A. The ignition system			3871
				B. The alternator		Yes	3872
				C. The electric fuel pump			3873
				D. Anti-lock braking system controllers			3874
		T4A11	143	Where should a mobile transceiver's power negative connection be made?	A		3877
				A. At the battery or engine block ground strap		Yes	3878
				B. At the antenna mount			3879
				C. To any metal part of the vehicle			3880
				D. Through the transceiver's mounting bracket			3881
	T4B - Operating controls; tuning, use of filters, squelch, AGC, repeater offset, memory channels	T4B01	144	What may happen if a transmitter is operated with the microphone gain set too high?	B		3885
				A. The output power might be too high			3886
				B. The output signal might become distorted		Yes	3887
				C. The frequency might vary			3888
				D. The SWR might increase			3889
		T4B02	145	Which of the following can be used to enter the operating frequency on a modern transceiver?	A		3892
				A. The keypad or VFO knob		Yes	3893
				B. The CTCSS or DTMF encoder			3894
				C. The Automatic Frequency Control			3895
				D. All of these choices are correct			3896
		T4B03	146	What is the purpose of the squelch control on a transceiver?	D		3899
				A. To set the highest level of volume desired			3900
				B. To set the transmitter power level			3901
				C. To adjust the automatic gain control			3902
				D. To mute receiver output noise when no signal is being received		Yes	3903
		T4B04	147	What is a way to enable quick access to a favorite frequency on your transceiver?	B		3906
				A. Enable the CTCSS tones			3907
				B. Store the frequency in a memory channel		Yes	3908
				C. Disable the CTCSS tones			3909
				D. Use the scan mode to select the desired frequency			3910
		T4B05	148	Which of the following would reduce ignition interference to a receiver?	C		3913
				A. Change frequency slightly			3914
				B. Decrease the squelch setting			3915
				C. Turn on the noise blanker		Yes	3916
				D. Use the RIT control			3917
		T4B06	149	Which of the following controls could be used if the voice pitch of a single-sideband signal seems too high or low?	D		3920
				A. The AGC or limiter			3921
				B. The bandwidth selection			3922
				C. The tone squelch		Yes	3923
				D. The receiver RIT or clarifier			3924
		T4B07	150	What does the term "RIT" mean?	B		3927
				A. Receiver Input Tone		Yes	3928
				B. Receiver Incremental Tuning			3929



Technician Exam Questions and Answers

				C. Rectifier Inverter Test			3930
				D. Remote Input Transmitter			3931
		T4B08	151	What is the advantage of having multiple receive bandwidth choices on a multimode transceiver?	B		3934
				A. Permits monitoring several modes at once			3935
				B. Permits noise or interference reduction by selecting a bandwidth matching the mode		Yes	3936
				C. Increases the number of frequencies that can be stored in memory			3937
				D. Increases the amount of offset between receive and transmit frequencies			3938
		T4B09	152	Which of the following is an appropriate receive filter to select in order to minimize noise and interference for SSB reception?	C		3941
				A. 500 Hz			3942
				B. 1000 Hz			3943
				C. 2400 Hz		Yes	3944
				D. 5000 Hz			3945
		T4B10	153	Which of the following is an appropriate receive filter to select in order to minimize noise and interference for CW reception?	A		3948
				A. 500 Hz		Yes	3949
				B. 1000 Hz			3950
				C. 2400 Hz			3951
				D. 5000 Hz			3952
		T4B11	154	Which of the following describes the common meaning of the term 'repeater offset'?	C		3955
				A. The distance between the repeater's transmit and receive antennas			3956
				B. The time delay before the repeater timer resets			3957
				C. The difference between the repeater's transmit and receive frequencies		Yes	3958
				D. The maximum frequency deviation permitted on the repeater's input signal			3959
SUBELEMENT T5 Electrical principles, math for electronics, electronic principles, Ohm's Law [4 Exam Questions - 4 Groups]	T5A - Electrical principles; current and voltage, conductors and insulators, alternating and direct current	T5A01	155	Electrical current is measured in which of the following units?	D		3964
				A. Volts			3965
				B. Watts			3966
				C. Ohms			3967
				D. Amperes		Yes	3968
		T5A02	156	Electrical power is measured in which of the following units?	B		3971
				A. Volts			3972
				B. Watts		Yes	3973
				C. Ohms			3974
				D. Amperes			3975
		T5A03	157	What is the name for the flow of electrons in an electric circuit?	D		3978
				A. Voltage			3979
				B. Resistance			3980
				C. Capacitance			3981
				D. Current		Yes	3982
		T5A04	158	What is the name for a current that flows only in one direction?	B		3985
				A. Alternating current			3986
				B. Direct current		Yes	3987
				C. Normal current			3988
				D. Smooth current			3989
		T5A05	159	What is the electrical term for the electromotive force (EMF) that causes electron flow?	A		3992
				A. Voltage		Yes	3993
				B. Ampere-hours			3994
				C. Capacitance			3995
				D. Inductance			3996
		T5A06	160	How much voltage does a mobile transceiver usually require?	A	Yes	3999
				A. About 12 volts			4000
				B. About 30 volts			4001
				C. About 120 volts			4002
				D. About 240 volts			4003

Technician Exam Questions and Answers

		T5A07	161	Which of the following is a good electrical conductor?	C		4006
				A. Glass			4007
				B. Wood			4008
				C. Copper		Yes	4009
				D. Rubber			4010
		T5A08	162	Which of the following is a good electrical insulator?	B		4013
				A. Copper			4014
				B. Glass		Yes	4015
				C. Aluminum			4016
				D. Mercury			4017
		T5A09	163	What is the name for a current that reverses direction on a regular basis?	A		4020
				A. Alternating current		Yes	4021
				B. Direct current			4022
				C. Circular current			4023
				D. Vertical current			4024
		T5A10	164	Which term describes the rate at which electrical energy is used?	C		4026
				A. Resistance			4027
				B. Current			4028
				C. Power		Yes	4029
				D. Voltage			4030
		T5A11	165	What is the basic unit of electromotive force?	A		4033
				A. The volt		Yes	4034
				B. The watt			4035
				C. The ampere			4036
				D. The ohm			4037
	T5B - Math for electronics; decibels, electrical units and the metric system	T5B01	166	How many milliamperes is 1.5 amperes?	C		4041
				A. 15 milliamperes			4042
				B. 150 milliamperes			4043
				C. 1,500 milliamperes		Yes	4044
				D. 15,000 milliamperes			4045
		T5B02	167	What is another way to specify a radio signal frequency of 1,500,000 hertz?	A		4048
				A. 1500 kHz		Yes	4049
				B. 1500 MHz			4050
				C. 15 GHz			4051
				D. 150 kHz			4052
		T5B03	168	How many volts are equal to one kilovolt?	C		4055
				A. One one-thousandth of a volt			4056
				B. One hundred volts			4057
				C. One thousand volts		Yes	4058
				D. One million volts			4059
		T5B04	169	How many volts are equal to one microvolt?	A		4062
				A. One one-millionth of a volt		Yes	4063
				B. One million volts			4064
				C. One thousand kilovolts			4065
				D. One one-thousandth of a volt			4066
		T5B05	170	Which of the following is equivalent to 500 milliwatts?	B		4069
				A. 0.02 watts			4070
				B. 0.5 watts		Yes	4071
				C. 5 watts			4072
				D. 50 watts			4073
		T5B06	171	If an ammeter calibrated in amperes is used to measure a 3000-milliamper current, what reading would it show?	C		4076
				A. 0.003 amperes			4077
				B. 0.3 amperes			4078
				C. 3 amperes		Yes	4079
				D. 3,000,000 amperes			4080
		T5B07	172	If a frequency readout calibrated in megahertz shows a reading of 3.525 MHz, what would it show if it were calibrated in kilohertz?	C		4083
				A. 0.003525 kHz			4084
				B. 35.25 kHz			4085
				C. 3525 kHz		Yes	4086
				D. 3,525,000 kHz			4087

Technician Exam Questions and Answers

		T5B08	173	How many microfarads are 1,000,000 picofarads?	B		4090
				A. 0.001 microfarads			4091
				B. 1 microfarad		Yes	4092
				C. 1000 microfarads			4093
				D. 1,000,000,000 microfarads			4094
		T5B09	174	What is the approximate amount of change, measured in decibels (dB), of a power increase from 5 watts to 10 watts?	B		4097
				A. 2 dB			4098
				B. 3 dB		Yes	4099
				C. 5 dB			4100
				D. 10 dB			4101
		T5B10	175	What is the approximate amount of change, measured in decibels (dB), of a power decrease from 12 watts to 3 watts?	C		4104
				A. 1 dB			4105
				B. 3 dB			4106
				C. 6 dB		Yes	4107
				D. 9 dB			4108
		T5B11	176	What is the approximate amount of change, measured in decibels (dB), of a power increase from 20 watts to 200 watts?	A		4111
				A. 10 dB		Yes	4112
				B. 12 dB			4113
				C. 18 dB			4114
				D. 28 dB			4115
	T5C - Electronic principles; capacitance, inductance, current flow in circuits, alternating current, definition of RF, power calculations	T5C01	177	What is the ability to store energy in an electric field called?	D		4119
				A. Inductance			4120
				B. Resistance			4121
				C. Tolerance			4122
				D. Capacitance		Yes	4123
		T5C02	178	What is the basic unit of capacitance?	A		4126
				A. The farad		Yes	4127
				B. The ohm			4128
				C. The volt			4129
				D. The henry			4130
		T5C03	179	What is the ability to store energy in a magnetic field called?	D		4133
				A. Admittance			4134
				B. Capacitance			4135
				C. Resistance			4136
				D. Inductance		Yes	4137
		T5C04	180	What is the basic unit of inductance?	C		4140
				A. The coulomb			4141
				B. The farad			4142
				C. The henry		Yes	4143
				D. The ohm			4144
		T5C05	181	What is the unit of frequency?	A		4147
				A. Hertz		Yes	4148
				B. Henry			4149
				C. Farad			4150
				D. Tesla			4151
		T5C06	182	What is the abbreviation that refers to radio frequency signals of all types?	C		4154
				A. AF			4155
				B. HF			4156
				C. RF		Yes	4157
				D. VHF			4158
		T5C07	183	What is a usual name for electromagnetic waves that travel through space?	C		4161
				A. Gravity waves			4162
				B. Sound waves			4163
				C. Radio waves		Yes	4164
				D. Pressure waves			4165
		T5C08	184	What is the formula used to calculate electrical power in a DC circuit?	A		4168
				A. Power (P) equals voltage (E) multiplied by current (I)		Yes	4169
				B. Power (P) equals voltage (E) divided by current (I)			4170

Technician Exam Questions and Answers

				C. Power (P) equals voltage (E) minus current (I)			4171
				D. Power (P) equals voltage (E) plus current (I)			4172
		T5C09	185	How much power is being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes?	A		4175
				A. 138 watts		Yes	4176
				B. 0.7 watts			4177
				C. 23.8 watts			4178
				D. 3.8 watts			4179
		T5C10	186	How much power is being used in a circuit when the applied voltage is 12 volts DC and the current is 2.5 amperes?	B		4182
				A. 4.8 watts			4183
				B. 30 watts		Yes	4184
				C. 14.5 watts			4185
				D. 0.208 watts			4186
		T5C11	187	How many amperes are flowing in a circuit when the applied voltage is 12 volts DC and the load is 120 watts?	B		4189
				A. 0.1 amperes			4190
				B. 10 amperes		Yes	4191
				C. 12 amperes			4192
				D. 132 amperes			4193
	T5D Ohm's Law	T5D01	188	What formula is used to calculate current in a circuit?	B		4197
				A. Current (I) equals voltage (E) multiplied by resistance (R)			4198
				B. Current (I) equals voltage (E) divided by resistance (R)		Yes	4199
				C. Current (I) equals voltage (E) added to resistance (R)			4200
				D. Current (I) equals voltage (E) minus resistance (R)			4201
		T5D02	189	What formula is used to calculate voltage in a circuit?	A		4204
				A. Voltage (E) equals current (I) multiplied by resistance (R)		Yes	4205
				B. Voltage (E) equals current (I) divided by resistance (R)			4206
				C. Voltage (E) equals current (I) added to resistance (R)			4207
				D. Voltage (E) equals current (I) minus resistance (R)			4208
		T5D03	190	What formula is used to calculate resistance in a circuit?	B		4211
				A. Resistance (R) equals voltage (E) multiplied by current (I)			4212
				B. Resistance (R) equals voltage (E) divided by current (I)		Yes	4213
				C. Resistance (R) equals voltage (E) added to current (I)			4214
				D. Resistance (R) equals voltage (E) minus current (I)			4215
		T5D04	191	What is the resistance of a circuit in which a current of 3 amperes flows through a resistor connected to 90 volts?	B		4218
				A. 3 ohms			4219
				B. 30 ohms		Yes	4220
				C. 93 ohms			4221
				D. 270 ohms			4222
		T5D05	192	What is the resistance in a circuit for which the applied voltage is 12 volts and the current flow is 1.5 amperes?	C		4225
				A. 18 ohms			4226
				B. 0.125 ohms			4227
				C. 8 ohms		Yes	4228
				D. 13.5 ohms			4229
		T5D06	193	What is the resistance of a circuit that draws 4 amperes from a 12-volt source?	A		4232
				A. 3 ohms		Yes	4233
				B. 16 ohms			4234
				C. 48 ohms			4235
				D. 8 Ohms			4236
		T5D07	194	What is the current flow in a circuit with an applied voltage of 120 volts and a resistance of 80 ohms?	D		4239
				A. 9600 amperes			4240
				B. 200 amperes			4241
				C. 0.667 amperes			4242
				D. 1.5 amperes		Yes	4243

Technician Exam Questions and Answers

		T5D08	195	What is the current flowing through a 100-ohm resistor connected across 200 volts?	C		4246
				A. 20,000 amperes			4247
				B. 0.5 amperes			4248
				C. 2 amperes		Yes	4249
				D. 100 amperes			4250
		T5D09	196	What is the current flowing through a 24-ohm resistor connected across 240 volts?	C		4253
				A. 24,000 amperes			4254
				B. 0.1 amperes			4255
				C. 10 amperes		Yes	4256
				D. 216 amperes			4257
		T5D10	197	What is the voltage across a 2-ohm resistor if a current of 0.5 amperes flows through it?	A		4260
				A. 1 volt		Yes	4261
				B. 0.25 volts			4262
				C. 2.5 volts			4263
				D. 1.5 volts			4264
		T5D11	198	What is the voltage across a 10-ohm resistor if a current of 1 ampere flows through it?	B		4267
				A. 1 volt			4268
				B. 10 volts		Yes	4269
				C. 11 volts			4270
				D. 9 volts			4271
		T5D12	199	What is the voltage across a 10-ohm resistor if a current of 2 amperes flows through it?	D		4274
				A. 8 volts			4275
				B. 0.2 volts			4276
				C. 12 volts			4277
				D. 20 volts		Yes	4278
SUBELEMENT T6 Electrical components, semiconductors, circuit diagrams, component functions [4 Exam Questions - 4 Correct]	T6A - Electrical components; fixed and variable resistors, capacitors, and inductors; fuses, switches, batteries	T6A01	200	What electrical component is used to oppose the flow of current in a DC circuit?	B		4283
				A. Inductor			4284
				B. Resistor		Yes	4285
				C. Voltmeter			4286
				D. Transformer			4287
		T6A02	201	What type of component is often used as an adjustable volume control?	C		4290
				A. Fixed resistor			4291
				B. Power resistor			4292
				C. Potentiometer		Yes	4293
				D. Transformer			4294
		T6A03	202	What electrical parameter is controlled by a potentiometer?	B		4297
				A. Inductance			4298
				B. Resistance		Yes	4299
				C. Capacitance			4300
				D. Field strength			4301
		T6A04	203	What electrical component stores energy in an electric field?	B		4304
				A. Resistor			4305
				B. Capacitor		Yes	4306
				C. Inductor			4307
				D. Diode			4308
		T6A05	204	What type of electrical component consists of two or more conductive surfaces separated by an insulator?	D		4311
				A. Resistor			4312
				B. Potentiometer			4313
				C. Oscillator			4314
				D. Capacitor		Yes	4315
		T6A06	205	What type of electrical component stores energy in a magnetic field?	C		4318
				A. Resistor			4319
				B. Capacitor			4320
				C. Inductor		Yes	4321
				D. Diode			4322
		T6A07	206	What electrical component is usually composed of a coil of wire?	D		4325

Technician Exam Questions and Answers

			A. Switch			4326
			B. Capacitor			4327
			C. Diode			4328
			D. Inductor		Yes	4329
		T6A08	207	What electrical component is used to connect or disconnect electrical circuits?	B	4332
			A. Zener Diode			4333
			B. Switch		Yes	4334
			C. Inductor			4335
			D. Variable resistor			4336
		T6A09	208	What electrical component is used to protect other circuit components from current overloads?	A	4339
			A. Fuse		Yes	4340
			B. Capacitor			4341
			C. Shield			4342
			D. Inductor			4343
		T6A10	209	What is the nominal voltage of a fully charged nickel-cadmium cell?	B	4346
			A. 1.0 volts			4347
			B. 1.2 volts		Yes	4348
			C. 1.5 volts			4349
			D. 2.2 volts			4350
		T6A11	210	Which battery type is not rechargeable?	B	4353
			A. Nickel-cadmium			4354
			B. Carbon-zinc		Yes	4355
			C. Lead-acid			4356
			D. Lithium-ion			4357
	T6B Semiconductors; basic principles of diodes and transistors	T6B01	211	What class of electronic components is capable of using a voltage or current signal to control current flow?	D	4361
			A. Capacitors			4362
			B. Inductors			4363
			C. Resistors			4364
			D. Transistors		Yes	4365
		T6B02	212	What electronic component allows current to flow in only one direction?	C	4368
			A. Resistor			4369
			B. Fuse			4370
			C. Diode		Yes	4371
			D. Driven Element			4372
		T6B03	213	Which of these components can be used as an electronic switch or amplifier?	C	4375
			A. Oscillator			4376
			B. Potentiometer			4377
			C. Transistor		Yes	4378
			D. Voltmeter			4379
		T6B04	214	Which of these components is made of three layers of semiconductor material?	B	4382
			A. Alternator			4383
			B. Bipolar junction transistor		Yes	4384
			C. Triode			4385
			D. Pentagrid converter			4386
		T6B05	215	Which of the following electronic components can amplify signals?	A	4389
			A. Transistor		Yes	4390
			B. Variable resistor			4391
			C. Electrolytic capacitor			4392
			D. Multi-cell battery			4393
		T6B06	216	How is a semiconductor diode's cathode lead usually identified?	B	4396
			A. With the word "cathode"			4397
			B. With a stripe		Yes	4398
			C. With the letter "C"			4399
			D. All of these choices are correct			4400
		T6B07	217	What does the abbreviation "LED" stand for?	B	4403
			A. Low Emission Diode			4404
			B. Light Emitting Diode		Yes	4405
			C. Liquid Emission Detector			4406
			D. Long Echo Delay			4407
		T6B08	218	What does the abbreviation "FET" stand for?	A	4410
			A. Field Effect Transistor		Yes	4411
			B. Fast Electron Transistor			4412

Technician Exam Questions and Answers

				C. Free Electron Transition		4413
				D. Field Emission Thickness		4414
		T6B09	219	What are the names of the two electrodes of a diode?	C	4417
				A. Plus and minus		4418
				B. Source and drain		4419
				C. Anode and cathode	Yes	4420
				D. Gate and base		4421
		T6B10	220	Which semiconductor component has an emitter electrode?	A	4424
				A. Bipolar transistor	Yes	4425
				B. Field effect transistor		4426
				C. Silicon diode		4427
				D. Bridge rectifier		4428
		T6B11	221	Which semiconductor component has a gate electrode?	B	4431
				A. Bipolar transistor		4432
				B. Field effect transistor	Yes	4433
				C. Silicon diode		4434
				D. Bridge rectifier		4435
		T6B12	222	What is the term that describes a transistor's ability to amplify a signal?	A	4438
				A. Gain	Yes	4439
				B. Forward resistance		4440
				C. Forward voltage drop		4441
				D. On resistance		4442
	T6C - Circuit diagrams; schematic symbols	T6C01	223	What is the name for standardized representations of components in an electrical wiring diagram?	C	4446
				A. Electrical depictions		4447
				B. Grey sketch		4448
				C. Schematic symbols	Yes	4449
				D. Component callouts		4450
		T6C02	224	What is component 1 in figure T1?	A	4453
				A. Resistor	Yes	4454
				B. Transistor		4455
				C. Battery		4456
				D. Connector		4457
		T6C03	225	What is component 2 in figure T1?	B	4460
				A. Resistor		4461
				B. Transistor	Yes	4462
				C. Indicator lamp		4463
				D. Connector		4464
		T6C04	226	What is component 3 in figure T1?	C	4467
				A. Resistor		4468
				B. Transistor		4469
				C. Lamp	Yes	4470
				D. Ground symbol		4471
		T6C05	227	What is component 4 in figure T1?	C	4474
				A. Resistor		4475
				B. Transistor		4476
				C. Battery	Yes	4477
				D. Ground symbol		4478
		T6C06	228	What is component 6 in figure T2?	B	4481
				A. Resistor		4482
				B. Capacitor	Yes	4483
				C. Regulator IC		4484
				D. Transistor		4485
		T6C07	229	What is component 8 in figure T2?	D	4488
				A. Resistor		4489
				B. Inductor		4490
				C. Regulator IC		4491
				D. Light emitting diode	Yes	4492
		T6C08	230	What is component 9 in figure T2?	C	4495
				A. Variable capacitor		4496
				B. Variable inductor		4497
				C. Variable resistor	Yes	4498
				D. Variable transformer		4499
		T6C09	231	What is component 4 in figure T2?	D	4502
				A. Variable inductor		4503
				B. Double-pole switch		4504
				C. Potentiometer		4505

Technician Exam Questions and Answers

				D. Transformer		Yes	4506
		T6C10	232	What is component 3 in figure T3?	D		4509
				A. Connector			4510
				B. Meter			4511
				C. Variable capacitor			4512
				D. Variable inductor		Yes	4513
		T6C11	233	What is component 4 in figure T3?	A		4516
				A. Antenna		Yes	4517
				B. Transmitter			4518
				C. Dummy load			4519
				D. Ground			4520
		T6C12	234	What do the symbols on an electrical circuit schematic diagram represent?	A		4523
				A. Electrical components		Yes	4524
				B. Logic states			4525
				C. Digital codes			4526
				D. Traffic nodes			4527
		T6C13	235	Which of the following is accurately represented in electrical circuit schematic diagrams?	C		4530
				A. Wire lengths			4531
				B. Physical appearance of components			4532
				C. The way components are interconnected		Yes	4533
				D. All of these choices are correct			4534
	T6D - Component functions	T6D01	236	Which of the following devices or circuits changes an alternating current into a varying direct current signal?	B		4538
				A. Transformer			4539
				B. Rectifier		Yes	4540
				C. Amplifier			4541
				D. Reflector			4542
		T6D02	237	What best describes a relay?	A		4545
				A. A switch controlled by an electromagnet		Yes	4546
				B. A current controlled amplifier			4547
				C. An optical sensor			4548
				D. A pass transistor			4549
		T6D03	238	What type of switch is represented by item 3 in figure T2?	A		4552
				A. Single-pole single-throw		Yes	4553
				B. Single-pole double-throw			4554
				C. Double-pole single-throw			4555
				D. Double-pole double-throw			4556
		T6D04	239	Which of the following can be used to display signal strength on a numeric scale?	C		4559
				A. Potentiometer			4560
				B. Transistor			4561
				C. Meter		Yes	4562
				D. Relay			4563
		T6D05	240	What type of circuit controls the amount of voltage from a power supply?	A		4566
				A. Regulator		Yes	4567
				B. Oscillator			4568
				C. Filter			4569
				D. Phase inverter			4570
		T6D06	241	What component is commonly used to change 120V AC house current to a lower AC voltage for other uses?	B		4573
				A. Variable capacitor			4574
				B. Transformer		Yes	4575
				C. Transistor			4576
				D. Diode			4577
		T6D07	242	Which of the following is commonly used as a visual indicator?	A		4580
				A. LED		Yes	4581
				B. FET			4582
				C. Zener diode			4583
				D. Bipolar transistor			4584
		T6D08	243	Which of the following is used together with an inductor to make a tuned circuit?	D		4587
				A. Resistor			4588
				B. Zener diode			4589
				C. Potentiometer			4590
				D. Capacitor		Yes	4591



Technician Exam Questions and Answers

		T6D09	244	What is the name of a device that combines several semiconductors and other components into one package?	C		4594
				A. Transducer			4595
				B. Multi-pole relay			4596
				C. Integrated circuit		Yes	4597
				D. Transformer			4598
		T6D10	245	What is the function of component 2 in Figure T1?	C		4601
				A. Give off light when current flows through it			4602
				B. Supply electrical energy			4603
				C. Control the flow of current		Yes	4604
				D. Convert electrical energy into radio waves			4605
		T6D11	246	Which of the following is a common use of coaxial cable?	B		4608
				A. Carry dc power from a vehicle battery to a mobile radio			4609
				B. Carry RF signals between a radio and antenna		Yes	4610
				C. Secure masts, tubing, and other cylindrical objects on towers			4611
				D. Connect data signals from a TNC to a computer			4612
SUBELEMENT T7 Station equipment; common transmitter and receiver problems, antenna measurements and troubleshooting, basic repair and testing [4 Exam	T7A - Station radios; receivers, transmitters, transceivers	T7A01	247	What is the function of a product detector?	C		4617
				A. Detect phase modulated signals			4618
				B. Demodulate FM signals			4619
				C. Detect CW and SSB signals		Yes	4620
				D. Combine speech and RF signals			4621
		T7A02	248	What type of receiver is shown in Figure T6?	C		4624
				A. Direct conversion			4625
				B. Super-regenerative			4626
				C. Single-conversion superheterodyne		Yes	4627
				D. Dual-conversion superheterodyne			4628
		T7A03	249	What is the function of a mixer in a superheterodyne receiver?	C		4631
				A. To reject signals outside of the desired passband			4632
				B. To combine signals from several stations together			4633
				C. To shift the incoming signal to an intermediate frequency		Yes	4634
				D. To connect the receiver with an auxiliary device, such as a TNC			4635
		T7A04	250	What circuit is pictured in Figure T7, if block 1 is a frequency discriminator?	D		4638
				A. A double-conversion receiver			4639
				B. A regenerative receiver			4640
				C. A superheterodyne receiver			4641
				D. An FM receiver		Yes	4642
		T7A05	251	What is the function of block 1 if figure T4 is a simple CW transmitter?	D		4645
				A. Reactance modulator			4646
				B. Product detector			4647
				C. Low-pass filter			4648
				D. Oscillator		Yes	4649
		T7A06	252	What device takes the output of a low-powered 28 MHz SSB exciter and produces a 222 MHz output signal?	C		4652
				A. High-pass filter			4653
				B. Low-pass filter			4654
				C. Transverter		Yes	4655
				D. Phase converter			4656
		T7A07	253	If figure T5 represents a transceiver in which block 1 is the transmitter portion and block 3 is the receiver portion what is the function of block 2?	B		4659
				A. A balanced modulator			4660
				B. A transmit-receive switch		Yes	4661
				C. A power amplifier			4662
				D. A high-pass filter			4663
		T7A08	254	Which of the following circuits combines a speech signal and an RF carrier?	C		4666
				A. Beat frequency oscillator			4667

Technician Exam Questions and Answers

			B. Discriminator			4668
			C. Modulator		Yes	4669
			D. Noise blanker			4670
		T7A09	255 Which of the following devices is most useful for VHF weak-signal communication?	B		4673
			A. A quarter-wave vertical antenna			4674
			B. A multi-mode VHF transceiver		Yes	4675
			C. An omni-directional antenna			4676
			D. A mobile VHF FM transceiver			4677
		T7A10	256 What device increases the low-power output from a handheld transceiver?	B		4680
			A. A voltage divider			4681
			B. An RF power amplifier		Yes	4682
			C. An impedance network			4683
			D. A voltage regulator			4684
		T7A11	257 Which of the following circuits demodulates FM signals?	B		4687
			A. Limiter			4688
			B. Discriminator		Yes	4689
			C. Product detector			4690
			D. Phase inverter			4691
		T7A12	258 Which term describes the ability of a receiver to discriminate between multiple signals?	C		4694
			A. Tuning rate			4695
			B. Sensitivity			4696
			C. Selectivity		Yes	4697
			D. Noise floor			4698
		T7A13	259 Where is an RF preamplifier installed?	A		4701
			A. Between the antenna and receiver		Yes	4702
			B. At the output of the transmitter's power amplifier			4703
			C. Between a transmitter and antenna tuner			4704
			D. At the receiver's audio output			4705
	T7B Common transmitter and receiver problems; symptoms of overload and overdrive, distortion, interference, over and under modulation, RF feedback, off frequency signals; fading and noise; problems with digital	T7B01	260 What can you do if you are told your FM handheld or mobile transceiver is over deviating?	D		4709
			A. Talk louder into the microphone			4710
			B. Let the transceiver cool off			4711
			C. Change to a higher power level			4712
			D. Talk farther away from the microphone		Yes	4713
		T7B02	261 What is meant by fundamental overload in reference to a receiver?	C		4716
			A. Too much voltage from the power supply			4717
			B. Too much current from the power supply			4718
			C. Interference caused by very strong signals		Yes	4719
			D. Interference caused by turning the volume up too high			4720
		T7B03	262 Which of the following may be a cause of radio frequency interference?	D		4723
			A. Fundamental overload			4724
			B. Harmonics			4725
			C. Spurious emissions			4726
			D. All of these choices are correct		Yes	4727
		T7B04	263 What is the most likely cause of interference to a non-cordless telephone from a nearby transmitter?	B		4730
			A. Harmonics from the transmitter			4731
			B. The telephone is inadvertently acting as a radio receiver		Yes	4732
			C. Poor station grounding			4733
			D. Improper transmitter adjustment			4734
		T7B05	264 What is a logical first step when attempting to cure a radio frequency interference problem in a nearby telephone?	C		4737
			A. Install a low-pass filter at the transmitter			4738
			B. Install a high-pass filter at the transmitter			4739
			C. Install an RF filter at the telephone		Yes	4740
			D. Improve station grounding			4741
		T7B06	265 What should you do first if someone tells you that your station's transmissions are interfering with their radio or TV reception?	A		4744

Technician Exam Questions and Answers

				A. Make sure that your station is functioning properly and that it does not cause interference to your own television		Yes	4745
				B. Immediately turn off your transmitter and contact the nearest FCC office for assistance			4746
				C. Tell them that your license gives you the right to transmit and nothing can be done to reduce the interference			4747
				D. Continue operating normally because your equipment cannot possibly cause any interference			4748
		T7B07	266	Which of the following may be useful in correcting a radio frequency interference problem?	D		4751
				A. Snap-on ferrite chokes			4752
				B. Low-pass and high-pass filters			4753
				C. Band-reject and band-pass filters			4754
				D. All of these choices are correct		Yes	4755
		T7B08	267	What should you do if a "Part 15" device in your neighbor's home is causing harmful interference to your amateur station?	D		4758
				A. Work with your neighbor to identify the offending device			4759
				B. Politely inform your neighbor about the rules that require him to stop using the device if it causes interference			4760
				C. Check your station and make sure it meets the standards of good amateur practice			4761
				D. All of these choices are correct		Yes	4762
		T7B09	268	What could be happening if another operator reports a variable high-pitched whine on the audio from your mobile transmitter?	D		4765
				A. Your microphone is picking up noise from an open window			4766
				B. You have the volume on your receiver set too high			4767
				C. You need to adjust your squelch control			4768
				D. Noise on the vehicle's electrical system is being transmitted along with your speech audio		Yes	4769
		T7B10	269	What might be the problem if you receive a report that your audio signal through the repeater is distorted or unintelligible?	D		4772
				A. Your transmitter may be slightly off frequency			4773
				B. Your batteries may be running low			4774
				C. You could be in a bad location			4775
				D. All of these choices are correct		Yes	4776
		T7B11	270	What is a symptom of RF feedback in a transmitter or transceiver?	C		4779
				A. Excessive SWR at the antenna connection			4780
				B. The transmitter will not stay on the desired frequency			4781
				C. Reports of garbled, distorted, or unintelligible transmissions		Yes	4782
				D. Frequent blowing of power supply fuses			4783
		T7B12	271	What does the acronym "BER" mean when applied to digital communications systems?	C		4786
				A. Baud Enhancement Recovery			4787
				B. Baud Error Removal			4788
				C. Bit Error Rate		Yes	4789
				D. Bit Exponent Resource			4790
	T7C Antenna measurements and troubleshooting; measuring SWR, dummy loads, feedline failure modes	T7C01	272	What is the primary purpose of a dummy load?	A		4794
				A. To prevent the radiation of signals when making tests		Yes	4795
				B. To prevent over-modulation of your transmitter			4796
				C. To improve the radiation from your antenna			4797
				D. To improve the signal to noise ratio of your receiver			4798
		T7C02	273	Which of the following instruments can be used to determine if an antenna is resonant at the desired operating frequency?	B		4801
				A. A VTVM			4802
				B. An antenna analyzer		Yes	4803
				C. A "Q" meter			4804
				D. A frequency counter			4805
		T7C03	274	What, in general terms, is standing wave ratio (SWR)?	A		4808

Technician Exam Questions and Answers

				A. A measure of how well a load is matched to a transmission line		Yes	4809
				B. The ratio of high to low impedance in a feedline			4810
				C. The transmitter efficiency ratio			4811
				D. An indication of the quality of your station's ground connection			4812
		T7C04	275	What reading on an SWR meter indicates a perfect impedance match between the antenna and the feedline?	C		4815
				A. 2 to 1			4816
				B. 1 to 3			4817
				C. 1 to 1		Yes	4818
				D. 10 to 1			4819
		T7C05	276	What is the approximate SWR value above which the protection circuits in most solid-state transmitters begin to reduce transmitter power?	A	Yes	4822
				A. 2 to 1			4823
				B. 1 to 2			4824
				C. 6 to 1			4825
				D. 10 to 1			4826
		T7C06	277	What does an SWR reading of 4:1 mean?	D		4829
				A. An antenna loss of 4 dB			4830
				B. A good impedance match			4831
				C. An antenna gain of 4			4832
				D. An impedance mismatch		Yes	4833
		T7C07	278	What happens to power lost in a feedline?	C		4836
				A. It increases the SWR			4837
				B. It comes back into your transmitter and could cause damage			4838
				C. It is converted into heat		Yes	4839
				D. It can cause distortion of your signal			4840
		T7C08	279	What instrument other than an SWR meter could you use to determine if a feedline and antenna are properly matched?	D		4843
				A. Voltmeter			4844
				B. Ohmmeter			4845
				C. Iambic pentameter			4846
				D. Directional wattmeter		Yes	4847
		T7C09	280	Which of the following is the most common cause for failure of coaxial cables?	A		4850
				A. Moisture contamination		Yes	4851
				B. Gamma rays			4852
				C. The velocity factor exceeds 1.0			4853
				D. Overloading			4854
		T7C10	281	Why should the outer jacket of coaxial cable be resistant to ultraviolet light?	D		4857
				A. Ultraviolet resistant jackets prevent harmonic radiation			4858
				B. Ultraviolet light can increase losses in the cable's jacket			4859
				C. Ultraviolet and RF signals can mix together, causing interference			4860
				D. Ultraviolet light can damage the jacket and allow water to enter the cable		Yes	4861
		T7C11	282	What is a disadvantage of "air core" coaxial cable when compared to foam or solid dielectric types?	C		4864
				A. It has more loss per foot			4865
				B. It cannot be used for VHF or UHF antennas			4866
				C. It requires special techniques to prevent water absorption		Yes	4867
				D. It cannot be used at below freezing temperatures			4868
	T7D Basic repair and testing; soldering, use of a voltmeter, ammeter and ohmmeter	T7D01	283	Which instrument would you use to measure electric potential or electromotive force?	B		4872
				A. An ammeter			4873
				B. A voltmeter		Yes	4874
				C. A wavemeter			4875
				D. An ohmmeter			4876
		T7D02	284	What is the correct way to connect a voltmeter to a circuit?	B		4879
				A. In series with the circuit			4880
				B. In parallel with the circuit		Yes	4881
				C. In quadrature with the circuit			4882
				D. In phase with the circuit			4883

Technician Exam Questions and Answers

		T7D03	285	How is an ammeter usually connected to a circuit?	A		4886
				A. In series with the circuit		Yes	4887
				B. In parallel with the circuit			4888
				C. In quadrature with the circuit			4889
				D. In phase with the circuit			4890
		T7D04	286	Which instrument is used to measure electric current?	D		4893
				A. An ohmmeter			4894
				B. A wavemeter			4895
				C. A voltmeter			4896
				D. An ammeter		Yes	4897
		T7D05	287	What instrument is used to measure resistance?	D		4900
				A. An oscilloscope			4901
				B. A spectrum analyzer			4902
				C. A noise bridge			4903
				D. An ohmmeter		Yes	4904
		T7D06	288	Which of the following might damage a multimeter?	C		4907
				A. Measuring a voltage too small for the chosen scale			4908
				B. Leaving the meter in the milliamps position overnight			4909
				C. Attempting to measure voltage when using the resistance setting		Yes	4910
				D. Not allowing it to warm up properly			4911
		T7D07	289	Which of the following measurements are commonly made using a multimeter?	D		4914
				A. SWR and RF power			4915
				B. Signal strength and noise			4916
				C. Impedance and reactance			4917
				D. Voltage and resistance		Yes	4918
		T7D08	290	Which of the following types of solder is best for radio and electronic use?	C		4921
				A. Acid-core solder			4922
				B. Silver solder			4923
				C. Rosin-core solder		Yes	4924
				D. Aluminum solder			4925
		T7D09	291	What is the characteristic appearance of a "cold" solder joint?	C		4928
				A. Dark black spots			4929
				B. A bright or shiny surface			4930
				C. A grainy or dull surface		Yes	4931
				D. A greenish tint			4932
		T7D10	292	What is probably happening when an ohmmeter, connected across a circuit, initially indicates a low resistance and then shows increasing resistance with time?	B		4935
				A. The ohmmeter is defective			4936
				B. The circuit contains a large capacitor		Yes	4937
				C. The circuit contains a large inductor			4938
				D. The circuit is a relaxation oscillator			4939
		T7D11	293	Which of the following precautions should be taken when measuring circuit resistance with an ohmmeter?	B		4942
				A. Ensure that the applied voltages are correct			4943
				B. Ensure that the circuit is not powered		Yes	4944
				C. Ensure that the circuit is grounded			4945
				D. Ensure that the circuit is operating at the correct frequency			4946
SUBELEMENT T8 Modulation modes; amateur satellite operation, operating activities, non-voice communications [4 Exam Questions - 4 Groups]	T8A Modulation modes; bandwidth of various signals	T8A01	294	Which of the following is a form of amplitude modulation?	C		4951
				A. Spread-spectrum			4952
				B. Packet radio			4953
				C. Single sideband		Yes	4954
				D. Phase shift keying			4955
		T8A02	295	What type of modulation is most commonly used for VHF packet radio transmissions?	A		4958
				A. FM		Yes	4959
				B. SSB			4960
				C. AM			4961

Technician Exam Questions and Answers

				D. Spread Spectrum			4962
		T8A03	296	Which type of voice modulation is most often used for long-distance or weak signal contacts on the VHF and UHF bands?	C		4965
				A. FM			4966
				B. AM			4967
				C. SSB		Yes	4968
				D. PM			4969
		T8A04	297	Which type of modulation is most commonly used for VHF and UHF voice repeaters?	D		4972
				A. AM			4973
				B. SSB			4974
				C. PSK			4975
				D. FM		Yes	4976
		T8A05	298	Which of the following types of emission has the narrowest bandwidth?	C		4979
				A. FM voice			4980
				B. SSB voice			4981
				C. CW		Yes	4982
				D. Slow-scan TV			4983
		T8A06	299	Which sideband is normally used for 10 meter HF, VHF and UHF single-sideband communications?	A		4986
				A. Upper sideband		Yes	4987
				B. Lower sideband			4988
				C. Suppressed sideband			4989
				D. Inverted sideband			4990
		T8A07	300	What is the primary advantage of single sideband over FM for voice transmissions?	C		4993
				A. SSB signals are easier to tune			4994
				B. SSB signals are less susceptible to interference			4995
				C. SSB signals have narrower bandwidth		Yes	4996
				D. All of these choices are correct			4997
		T8A08	301	What is the approximate bandwidth of a single sideband voice signal?	B		5000
				A. 1 kHz			5001
				B. 3 kHz		Yes	5002
				C. 6 kHz			5003
				D. 15 kHz			5004
		T8A09	302	What is the approximate bandwidth of a VHF repeater FM phone signal?	C		5007
				A. Less than 500 Hz			5008
				B. About 150 kHz			5009
				C. Between 5 and 15 kHz		Yes	5010
				D. Between 50 and 125 kHz			5011
		T8A10	303	What is the typical bandwidth of analog fast-scan TV transmissions on the 70 cm band?	B		5014
				A. More than 10 MHz			5015
				B. About 6 MHz		Yes	5016
				C. About 3 MHz			5017
				D. About 1 MHz			5018
		T8A11	304	What is the approximate maximum bandwidth required to transmit a CW signal?	B		5021
				A. 2.4 kHz			5022
				B. 150 Hz		Yes	5023
				C. 1000 Hz			5024
				D. 15 kHz			5025
	T8B - Amateur satellite operation; Doppler shift, basic orbits, operating protocols	T8B01	305	Who may be the control operator of a station communicating through an amateur satellite or space station?	D		5029
				A. Only an Amateur Extra Class operator			5030
				B. A General Class licensee or higher licensee who has a satellite operator certification			5031
				C. Only an Amateur Extra Class operator who is also an AMSAT member			5032
				D. Any amateur whose license privileges allow them to transmit on the satellite uplink frequency		Yes	5033
		T8B02	306	How much transmitter power should be used on the uplink frequency of an amateur satellite or space station?	B		5036
				A. The maximum power of your transmitter			5037
				B. The minimum amount of power needed to complete the contact		Yes	5038
				C. No more than half the rating of your linear amplifier			5039

Technician Exam Questions and Answers

				D. Never more than 1 watt			5040
		T8B03	307	Which of the following can be done using an amateur radio satellite?	A		5043
				A. Talk to amateur radio operators in other countries		Yes	5044
				B. Get global positioning information			5045
				C. Make telephone calls			5046
				D. All of these choices are correct			5047
		T8B04	308	Which amateur stations may make contact with an amateur station on the International Space Station using 2 meter and 70 cm band amateur radio frequencies?	B		5050
				A. Only members of amateur radio clubs at NASA facilities			5051
				B. Any amateur holding a Technician or higher class license		Yes	5052
				C. Only the astronaut's family members who are hams			5053
				D. You cannot talk to the ISS on amateur radio frequencies			5054
		T8B05	309	What is a satellite beacon?	D		5057
				A. The primary transmit antenna on the satellite			5058
				B. An indicator light that shows where to point your antenna			5059
				C. A reflective surface on the satellite			5060
				D. A transmission from a space station that contains information about a satellite		Yes	5061
		T8B06	310	What can be used to determine the time period during which an amateur satellite or space station can be accessed?	D		5064
				A. A GPS receiver			5065
				B. A field strength meter			5066
				C. A telescope			5067
				D. A satellite tracking program		Yes	5068
		T8B07	311	With regard to satellite communications, what is Doppler shift?	C		5071
				A. A change in the satellite orbit			5072
				B. A mode where the satellite receives signals on one band and transmits on another			5073
				C. An observed change in signal frequency caused by relative motion between the satellite and the earth station		Yes	5074
				D. A special digital communications mode for some satellites			5075
		T8B08	312	What is meant by the statement that a satellite is operating in "mode U/V"?	B		5078
				A. The satellite uplink is in the 15 meter band and the downlink is in the 10 meter band			5079
				B. The satellite uplink is in the 70 cm band and the downlink is in the 2 meter band		Yes	5080
				C. The satellite operates using ultraviolet frequencies			5081
				D. The satellite frequencies are usually variable			5082
		T8B09	313	What causes "spin fading" when referring to satellite signals?	B		5085
				A. Circular polarized noise interference radiated from the sun			5086
				B. Rotation of the satellite and its antennas		Yes	5087
				C. Doppler shift of the received signal			5088
				D. Interfering signals within the satellite uplink band			5089
		T8B10	314	What do the initials LEO tell you about an amateur satellite?	C		5092
				A. The satellite battery is in Low Energy Operation mode			5093
				B. The satellite is performing a Lunar Ejection Orbit maneuver			5094
				C. The satellite is in a Low Earth Orbit		Yes	5095
				D. The satellite uses Light Emitting Optics			5096
		T8B11	315	What is a commonly used method of sending signals to and from a digital satellite?	C		5099
				A. USB AFSK			5100
				B. PSK31			5101
				C. FM Packet		Yes	5102
				D. WSJT			5103
		T8C01	316	Which of the following methods is used to locate sources of noise interference or jamming?	C		5107
				A. Echolocation			5108

Technician Exam Questions and Answers

				B. Doppler radar			5109
				C. Radio direction finding		Yes	5110
				D. Phase locking			5111
	T8C02	317	Which of these items would be useful for a hidden transmitter hunt?	B			5114
				A. Calibrated SWR meter			5115
				B. A directional antenna		Yes	5116
				C. A calibrated noise bridge			5117
				D. All of these choices are correct			5118
	T8C03	318	What popular operating activity involves contacting as many stations as possible during a specified period of time?	A			5121
				A. Contesting		Yes	5122
				B. Net operations			5123
				C. Public service events			5124
				D. Simulated emergency exercises			5125
	T8C04	319	Which of the following is good procedure when contacting another station in a radio contest?	C			5128
				A. Be sure to sign only the last two letters of your call if there is a pileup calling the station			5129
				B. Work the station twice to be sure that you are in his log			5130
				C. Send only the minimum information needed for proper identification and the contest exchange		Yes	5131
				D. All of these choices are correct			5132
	T8C05	320	What is a grid locator?	A			5135
				A. A letter-number designator assigned to a geographic location		Yes	5136
				B. A letter-number designator assigned to an azimuth and elevation			5137
				C. An instrument for neutralizing a final amplifier			5138
				D. An instrument for radio direction finding			5139
	T8C06	321	For what purpose is a temporary "1 by 1" format (letter-number-letter) call sign assigned?	C			5142
				A. To designate an experimental station			5143
				B. To honor a deceased relative who was a radio amateur			5144
				C. For operations in conjunction with an activity of special significance to the amateur community		Yes	5145
				D. All of these choices are correct			5146
	T8C07	322	What is the maximum power allowed when transmitting telecommand signals to radio controlled models?	B			5149
				A. 500 milliwatts			5150
				B. 1 watt		Yes	5151
				C. 25 watts			5152
				D. 1500 watts			5153
	T8C08	323	What is required in place of on-air station identification when sending signals to a radio control model using amateur frequencies?	C			5156
				A. Voice identification must be transmitted every 10 minutes			5157
				B. Morse code ID must be sent once per hour			5158
				C. A label indicating the licensee's name, call sign and address must be affixed to the transmitter		Yes	5159
				D. A flag must be affixed to the transmitter antenna with the station call sign in 1 inch high letters or larger			5160
	T8C09	324	How might you obtain a list of active nodes that use VoIP?	C			5163
				A. From the FCC Rulebook			5164
				B. From your local emergency coordinator			5165
				C. From a repeater directory		Yes	5166
				D. From the local repeater frequency coordinator			5167
	T8C10	325	How do you select a specific IRLP node when using a portable transceiver?	D			5170
				A. Choose a specific CTCSS tone			5171
				B. Choose the correct DSC tone			5172
				C. Access the repeater autopatch			5173
				D. Use the keypad to transmit the IRLP node ID		Yes	5174
	T8C11	326	What name is given to an amateur radio station that is used to connect other amateur stations to the Internet?	A			5177
				A. A gateway		Yes	5178



Technician Exam Questions and Answers

				B. A repeater			5179
				C. A digipeater			5180
				D. A beacon			5181
	T8D Non-voice communications; image data, digital modes, CW, packet, PSK31	T8D01	327	Which of the following is an example of a digital communications method?	D		5185
				A. Packet			5186
				B. PSK31			5187
				C. MFSK			5188
				D. All of these choices are correct		Yes	5189
		T8D02	328	What does the term APRS mean?	A		5192
				A. Automatic Position Reporting System		Yes	5193
				B. Associated Public Radio Station			5194
				C. Auto Planning Radio Set-up			5195
				D. Advanced Polar Radio System			5196
		T8D03	329	Which of the following is normally used when sending automatic location reports via amateur radio?	D		5199
				A. A connection to the vehicle speedometer			5200
				B. A WWV receiver			5201
				C. A connection to a broadcast FM sub-carrier receiver			5202
				D. A Global Positioning System receiver		Yes	5203
		T8D04	330	What type of transmission is indicated by the term NTSC?	C		5206
				A. A Normal Transmission mode in Static Circuit			5207
				B. A special mode for earth satellite uplink			5208
				C. An analog fast scan color TV signal		Yes	5209
				D. A frame compression scheme for TV signals			5210
		T8D05	331	Which of the following emission modes may be used by a Technician Class operator between 219 and 220 MHz?	B		5213
				A. Spread spectrum			5214
				B. Data		Yes	5215
				C. SSB voice			5216
				D. Fast-scan television			5217
		T8D06	332	What does the abbreviation PSK mean?	B		5220
				A. Pulse Shift Keying			5221
				B. Phase Shift Keying		Yes	5222
				C. Packet Short Keying			5223
				D. Phased Slide Keying			5224
		T8D07	333	What is PSK31?	D		5227
				A. A high-rate data transmission mode			5228
				B. A method of reducing noise interference to FM signals			5229
				C. A method of compressing digital television signal			5230
				D. A low-rate data transmission mode		Yes	5231
		T8D08	334	Which of the following may be included in packet transmissions?	D		5234
				A. A check sum which permits error detection			5235
				B. A header which contains the call sign of the station to which the information is being sent			5236
				C. Automatic repeat request in case of error			5237
				D. All of these choices are correct		Yes	5238
		T8D09	335	What code is used when sending CW in the amateur bands?	C		5241
				A. Baudot			5242
				B. Hamming			5243
				C. International Morse		Yes	5244
				D. Gray			5245
		T8D10	336	Which of the following can be used to transmit CW in the amateur bands?	D		5248
				A. Straight Key			5249
				B. Electronic Keyer			5250
				C. Computer Keyboard			5251
				D. All of these choices are correct		Yes	5252
		T8D11	337	What is a "parity" bit?	C		5255
				A. A control code required for automatic position reporting			5256
				B. A timing bit used to ensure equal sharing of a frequency			5257
				C. An extra code element used to detect errors in received data		Yes	5258

Technician Exam Questions and Answers

				D. A "triple width" bit used to signal the end of a character			5259
SUBELEMENT T9 Antennas, feedlines - [2 Exam Questions - 2 Groups]	T9A Antennas; vertical and horizontal, concept of gain, common portable and mobile antennas, relationships between antenna length and frequency	T9A01	338	What is a beam antenna?	C		5264
				A. An antenna built from aluminum I-beams			5265
				B. An omnidirectional antenna invented by Clarence Beam			5266
				C. An antenna that concentrates signals in one direction		Yes	5267
				D. An antenna that reverses the phase of received signals			5268
		T9A02	339	Which of the following is true regarding vertical antennas?	B		5271
				A. The magnetic field is perpendicular to the Earth			5272
				B. The electric field is perpendicular to the Earth		Yes	5273
				C. The phase is inverted			5274
				D. The phase is reversed			5275
		T9A03	340	Which of the following describes a simple dipole mounted so the conductor is parallel to the Earth's surface?	B		5278
				A. A ground wave antenna			5279
				B. A horizontally polarized antenna		Yes	5280
				C. A rhombic antenna			5281
				D. A vertically polarized antenna			5282
		T9A04	341	What is a disadvantage of the "rubber duck" antenna supplied with most handheld radio transceivers?	A		5285
				A. It does not transmit or receive as effectively as a full-sized antenna		Yes	5286
				B. It transmits a circularly polarized signal			5287
				C. If the rubber end cap is lost it will unravel very quickly			5288
				D. All of these choices are correct			5289
		T9A05	342	How would you change a dipole antenna to make it resonant on a higher frequency?	C		5292
				A. Lengthen it			5293
				B. Insert coils in series with radiating wires			5294
				C. Shorten it		Yes	5295
				D. Add capacity hats to the ends of the radiating wires			5296
		T9A06	343	What type of antennas are the quad, Yagi, and dish?	C		5299
				A. Non-resonant antennas			5300
				B. Loop antennas			5301
				C. Directional antennas		Yes	5302
				D. Isotropic antennas			5303
		T9A07	344	What is a good reason not to use a "rubber duck" antenna inside your car?	A		5306
				A. Signals can be significantly weaker than when it is outside of the vehicle		Yes	5307
				B. It might cause your radio to overheat			5308
				C. The SWR might decrease, decreasing the signal strength			5309
				D. All of these choices are correct			5310
		T9A08	345	What is the approximate length, in inches, of a quarter-wavelength vertical antenna for 146 MHz?	C		5313
				A. 112			5314
				B. 50			5315
				C. 19		Yes	5316
				D. 12			5317
		T9A09	346	What is the approximate length, in inches, of a 6 meter 1/2-wavelength wire dipole antenna?	C		5320
				A. 6			5321
				B. 50			5322
				C. 112		Yes	5323
				D. 236			5324
		T9A10	347	In which direction is the radiation strongest from a half-wave dipole antenna in free space?	C		5327
				A. Equally in all directions			5328
				B. Off the ends of the antenna			5329
				C. Broadside to the antenna		Yes	5330
				D. In the direction of the feedline			5331
		T9A11	348	What is meant by the gain of an antenna?	C		5334

Technician Exam Questions and Answers

				A. The additional power that is added to the transmitter power			5335
				B. The additional power that is lost in the antenna when transmitting on a higher frequency			5336
				C. The increase in signal strength in a specified direction when compared to a reference antenna		Yes	5337
				D. The increase in impedance on receive or transmit compared to a reference antenna			5338
		T9B01	349	Why is it important to have a low SWR in an antenna system that uses coaxial cable feedline?	B		5342
				A. To reduce television interference			5343
				B. To allow the efficient transfer of power and reduce losses		Yes	5344
				C. To prolong antenna life			5345
				D. All of these choices are correct			5346
	T9B - Feedlines; types, losses vs. frequency, SWR concepts, matching weather protection, connectors	T9B02	350	What is the impedance of the most commonly used coaxial cable in typical amateur radio installations?	B		5349
				A. 8 ohms			5350
				B. 50 ohms		Yes	5351
				C. 600 ohms			5352
				D. 12 ohms			5353
		T9B03	351	Why is coaxial cable used more often than any other feedline for amateur radio antenna systems?	A		5356
				A. It is easy to use and requires few special installation considerations		Yes	5357
				B. It has less loss than any other type of feedline			5358
				C. It can handle more power than any other type of feedline			5359
				D. It is less expensive than any other types of feedline			5360
		T9B04	352	What does an antenna tuner do?	A		5363
				A. It matches the antenna system impedance to the transceiver's output impedance		Yes	5364
				B. It helps a receiver automatically tune in weak stations			5365
				C. It allows an antenna to be used on both transmit and receive			5366
				D. It automatically selects the proper antenna for the frequency band being used			5367
		T9B05	353	What generally happens as the frequency of a signal passing through coaxial cable is increased?	D		5370
				A. The apparent SWR increases			5371
				B. The reflected power increases			5372
				C. The characteristic impedance increases			5373
				D. The loss increases		Yes	5374
		T9B06	354	Which of the following connectors is most suitable for frequencies above 400 MHz?	B		5377
				A. A UHF (PL-259/SO-239) connector			5378
				B. A Type N connector		Yes	5379
				C. An RS-213 connector			5380
				D. A DB-23 connector			5381
		T9B07	355	Which of the following is true of PL-259 type coax connectors?	C		5384
				A. They are good for UHF frequencies			5385
				B. They are water tight			5386
				C. They are commonly used at HF frequencies		Yes	5387
				D. They are a bayonet type connector			5388
		T9B08	356	Why should coax connectors exposed to the weather be sealed against water intrusion?	A		5391
				A. To prevent an increase in feedline loss		Yes	5392
				B. To prevent interference to telephones			5393
				C. To keep the jacket from becoming loose			5394
				D. All of these choices are correct			5395
		T9B09	357	What might cause erratic changes in SWR readings?	B		5398
				A. The transmitter is being modulated			5399
				B. A loose connection in an antenna or a feedline		Yes	5400
				C. The transmitter is being over-modulated			5401
				D. Interference from other stations is distorting your signal			5402
		T9B10	358	What electrical difference exists between the smaller RG-58 and larger RG-8 coaxial cables?	C		5405
				A. There is no significant difference between the two types			5406
				B. RG-58 cable has less loss at a given frequency			5407

Technician Exam Questions and Answers

				C. RG-8 cable has less loss at a given frequency		Yes	5408
				D. RG-58 cable can handle higher power levels			5409
		T9B11	359	Which of the following types of feedline has the lowest loss at VHF and UHF?	C		5412
				A. 50-ohm flexible coax			5413
				B. Multi-conductor unbalanced cable			5414
				C. Air-insulated hard line		Yes	5415
				D. 75-ohm flexible coax			5416
SUBELEMENT TO AC power circuits, antenna installation, RF hazards [3 Exam Questions - 3 Groups]	TOA AC power circuits; hazardous voltages, fuses and circuit breakers, grounding, lightning protection, battery safety, electrical code compliance	TOA01	360	Which is a commonly accepted value for the lowest voltage that can cause a dangerous electric shock?	B		5421
				A. 12 volts			5422
				B. 30 volts		Yes	5423
				C. 120 volts			5424
				D. 300 volts			5425
		TOA02	361	How does current flowing through the body cause a health hazard?	D		5428
				A. By heating tissue			5429
				B. It disrupts the electrical functions of cells			5430
				C. It causes involuntary muscle contractions			5431
				D. All of these choices are correct		Yes	5432
		TOA03	362	What is connected to the green wire in a three-wire electrical AC plug?	C		5435
				A. Neutral			5436
				B. Hot			5437
				C. Safety ground		Yes	5438
				D. The white wire			5439
		TOA04	363	What is the purpose of a fuse in an electrical circuit?	B		5442
				A. To prevent power supply ripple from damaging a circuit			5443
				B. To interrupt power in case of overload		Yes	5444
				C. To limit current to prevent shocks			5445
				D. All of these choices are correct			5446
		TOA05	364	Why is it unwise to install a 20-ampere fuse in the place of a 5-ampere fuse?	C		5449
				A. The larger fuse would be likely to blow because it is rated for higher current			5450
				B. The power supply ripple would greatly increase			5451
				C. Excessive current could cause a fire		Yes	5452
				D. All of these choices are correct			5453
		TOA06	365	What is a good way to guard against electrical shock at your station?	D		5456
				A. Use three-wire cords and plugs for all AC powered equipment			5457
				B. Connect all AC powered station equipment to a common safety ground			5458
				C. Use a circuit protected by a ground-fault interrupter			5459
				D. All of these choices are correct		Yes	5460
		TOA07	366	Which of these precautions should be taken when installing devices for lightning protection in a coaxial cable feedline?	D		5463
				A. Include a parallel bypass switch for each protector so that it can be switched out of the circuit when running high power			5464
				B. Include a series switch in the ground line of each protector to prevent RF overload from inadvertently damaging the protector			5465
				C. Keep the ground wires from each protector separate and connected to station ground			5466
				D. Ground all of the protectors to a common plate which is in turn connected to an external ground		Yes	5467
		TOA08	367	What is one way to recharge a 12-volt lead-acid station battery if the commercial power is out?	C		5470
				A. Cool the battery in ice for several hours			5471
				B. Add acid to the battery			5472
				C. Connect the battery to a car's battery and run the engine		Yes	5473
				D. All of these choices are correct			5474
		TOA09	368	What kind of hazard is presented by a conventional 12-volt storage battery?	C		5477
				A. It emits ozone which can be harmful to the atmosphere			5478

Technician Exam Questions and Answers

				B. Shock hazard due to high voltage			5479
				C. Explosive gas can collect if not properly vented		Yes	5480
				D. All of these choices are correct			5481
		T0A10	369	What can happen if a lead-acid storage battery is charged or discharged too quickly?	A		5484
				A. The battery could overheat and give off flammable gas or explode		Yes	5485
				B. The voltage can become reversed			5486
				C. The 'memory effect' will reduce the capacity of the battery			5487
				D. All of these choices are correct			5488
		T0A11	370	Which of the following is good practice when installing ground wires on a tower for lightning protection?	C		5491
				A. Put a loop in the ground connection to prevent water damage to the ground system			5492
				B. Make sure that all bends in the ground wires are clean, right angle bends			5493
				C. Ensure that connections are short and direct		Yes	5494
				D. All of these choices are correct			5495
		T0A12	371	What kind of hazard might exist in a power supply when it is turned off and disconnected?	D		5498
				A. Static electricity could damage the grounding system			5499
				B. Circulating currents inside the transformer might cause damage			5500
				C. The fuse might blow if you remove the cover			5501
				D. You might receive an electric shock from stored charge in large capacitors		Yes	5502
		T0A13	372	What safety equipment should always be included in home-built equipment that is powered from 120V AC power circuits?	A		5505
				A. A fuse or circuit breaker in series with the AC "hot" conductor		Yes	5506
				B. An AC voltmeter across the incoming power source			5507
				C. An inductor in series with the AC power source			5508
				D. A capacitor across the AC power source			5509
	TOB Antenna installation; tower safetv. overhead power lines	T0B01	373	When should members of a tower work team wear a hard hat and safety glasses?	C		5513
				A. At all times except when climbing the tower			5514
				B. At all times except when belted firmly to the tower			5515
				C. At all times when any work is being done on the tower		Yes	5516
				D. Only when the tower exceeds 30 feet in height			5517
		T0B02	374	What is a good precaution to observe before climbing an antenna tower?	C		5520
				A. Make sure that you wear a grounded wrist strap			5521
				B. Remove all tower grounding connections			5522
				C. Put on a climbing harness and safety glasses		Yes	5523
				D. All of the these choices are correct			5524
		T0B03	375	Under what circumstances is it safe to climb a tower without a helper or observer?	D		5527
				A. When no electrical work is being performed			5528
				B. When no mechanical work is being performed			5529
				C. When the work being done is not more than 20 feet above the ground			5530
				D. Never		Yes	5531
		T0B04	376	Which of the following is an important safety precaution to observe when putting up an antenna tower?	C		5534
				A. Wear a ground strap connected to your wrist at all times			5535
				B. Insulate the base of the tower to avoid lightning strikes			5536
				C. Look for and stay clear of any overhead electrical wires		Yes	5537
				D. All of these choices are correct			5538
		T0B05	377	What is the purpose of a gin pole?	C		5541
				A. To temporarily replace guy wires			5542
				B. To be used in place of a safety harness			5543
				C. To lift tower sections or antennas		Yes	5544
				D. To provide a temporary ground			5545
		T0B06	378	What is the minimum safe distance from a power line to allow when installing an antenna?	D		5548
				A. Half the width of your property			5549

Technician Exam Questions and Answers

			B. The height of the power line above ground			5550
			C. 1/2 wavelength at the operating frequency			5551
			D. So that if the antenna falls unexpectedly, no part of it can come closer than 10 feet to the power wires		Yes	5552
		T0B07	379 Which of the following is an important safety rule to remember when using a crank-up tower?	C		5555
			A. This type of tower must never be painted			5556
			B. This type of tower must never be grounded			5557
			C. This type of tower must never be climbed unless it is in the fully retracted position		Yes	5558
			D. All of these choices are correct			5559
		T0B08	380 What is considered to be a proper grounding method for a tower?	C		5562
			A. A single four-foot ground rod, driven into the ground no more than 12 inches from the base			5563
			B. A ferrite-core RF choke connected between the tower and ground			5564
			C. Separate eight-foot long ground rods for each tower leg, bonded to the tower and each other		Yes	5565
			D. A connection between the tower base and a cold water pipe			5566
		T0B09	381 Why should you avoid attaching an antenna to a utility pole?	C		5569
			A. The antenna will not work properly because of induced voltages			5570
			B. The utility company will charge you an extra monthly fee			5571
			C. The antenna could contact high-voltage power wires		Yes	5572
			D. All of these choices are correct			5573
		T0B10	382 Which of the following is true concerning grounding conductors used for lightning protection?	C		5576
			A. Only non-insulated wire must be used			5577
			B. Wires must be carefully routed with precise right-angle bends			5578
			C. Sharp bends must be avoided		Yes	5579
			D. Common grounds must be avoided			5580
		T0B11	383 Which of the following establishes grounding requirements for an amateur radio tower or antenna?	B		5583
			A. FCC Part 97 Rules			5584
			B. Local electrical codes		Yes	5585
			C. FAA tower lighting regulations			5586
			D. Underwriters Laboratories' recommended practices			5587
	TOC - RF hazards; radiation exposure, proximity to antennas, recognized safe power levels, exposure to others	T0C01	384 What type of radiation are VHF and UHF radio signals?	D		5591
			A. Gamma radiation			5592
			B. Ionizing radiation			5593
			C. Alpha radiation			5594
			D. Non-ionizing radiation		Yes	5595
		T0C02	385 Which of the following frequencies has the lowest Maximum Permissible Exposure limit?	B		5598
			A. 3.5 MHz			5599
			B. 50 MHz		Yes	5600
			C. 440 MHz			5601
			D. 1296 MHz			5602
		T0C03	386 What is the maximum power level that an amateur radio station may use at VHF frequencies before an RF exposure evaluation is required?	C		5605
			A. 1500 watts PEP transmitter output			5606
			B. 1 watt forward power			5607
			C. 50 watts PEP at the antenna		Yes	5608
			D. 50 watts PEP reflected power			5609
		T0C04	387 What factors affect the RF exposure of people near an amateur station antenna?	D		5612
			A. Frequency and power level of the RF field			5613
			B. Distance from the antenna to a person			5614
			C. Radiation pattern of the antenna			5615
			D. All of these choices are correct		Yes	5616
		T0C05	388 Why do exposure limits vary with frequency?	D		5619
			A. Lower frequency RF fields have more energy than higher frequency fields			5620

Technician Exam Questions and Answers

			B. Lower frequency RF fields do not penetrate the human body			5621
			C. Higher frequency RF fields are transient in nature			5622
			D. The human body absorbs more RF energy at some frequencies than at others	Yes		5623
		TOC06	389 Which of the following is an acceptable method to determine that your station complies with FCC RF exposure regulations?	D		5626
			A. By calculation based on FCC OET Bulletin 65			5627
			B. By calculation based on computer modeling			5628
			C. By measurement of field strength using calibrated equipment			5629
			D. All of these choices are correct	Yes		5630
		TOC07	390 What could happen if a person accidentally touched your antenna while you were transmitting?	B		5633
			A. Touching the antenna could cause television interference			5634
			B. They might receive a painful RF burn	Yes		5635
			C. They might develop radiation poisoning			5636
			D. All of these choices are correct			5637
		TOC08	391 Which of the following actions might amateur operators take to prevent exposure to RF radiation in excess of FCC-specified limits?	A		5640
			A. Relocate antennas	Yes		5641
			B. Relocate the transmitter			5642
			C. Increase the duty cycle			5643
			D. All of these choices are correct			5644
		TOC09	392 How can you make sure your station stays in compliance with RF safety regulations?	B		5647
			A. By informing the FCC of any changes made in your station			5648
			B. By re-evaluating the station whenever an item of equipment is changed	Yes		5649
			C. By making sure your antennas have low SWR			5650
			D. All of these choices are correct			5651
		TOC10	393 Why is duty cycle one of the factors used to determine safe RF radiation exposure levels?	A		5654
			A. It affects the average exposure of people to radiation	Yes		5655
			B. It affects the peak exposure of people to radiation			5656
			C. It takes into account the antenna feedline loss			5657
			D. It takes into account the thermal effects of the final amplifier			5658
		TOC11	394 What is meant by "duty cycle" when referring to RF exposure?	C		5661
			A. The difference between lowest usable output and maximum rated output power of a transmitter			5662
			B. The difference between PEP and average power of an SSB signal			5663
			C. The ratio of on-air time to total operating time of a transmitted signal	Yes		5664
			D. The amount of time the operator spends transmitting			5665