

E2C06

C. In the weak signal segment of the band, with most of the activity near the calling frequency

ARRL Extra Manual: Page 2-3

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2C05

B. To handle the receiving and sending of confirmation cards for a DX station

ARRL Extra Manual: Page 2-3

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2C11

A. Send your full call sign once or twice

ARRL Extra Manual: Page 2-5

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2C10

D. All of these choices are correct

ARRL Extra Manual: Page 2-5

Ham Academy Lesson: 1A

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E2C01

A. Operators are permitted to make contacts even if they do not submit a log

ARRL Extra Manual: Page 2-7

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2C12

B. Switch to a lower frequency HF band

ARRL Extra Manual: Page 2-6

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2C04

D. 146.52 MHz

ARRL Extra Manual: Page 2-7

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2C03

A. 30 meters

ARRL Extra Manual: Page 2-7

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2C02

A. The generally prohibited practice of posting one's own call sign and frequency on a call sign spotting network

ARRL Extra Manual: Page 2-9

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2C07

A. A standard for submission of electronic contest logs

ARRL Extra Manual: Page 2-7

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2D05

B. Store-and-forward

ARRL Extra Manual: Page 2-11

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2D04

C. To store digital messages in the satellite for later download by other stations

ARRL Extra Manual: Page 2-11

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2D07

C. AX.25

ARRL Extra Manual: Page 2-12

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2D06

A. 144.39 MHz

ARRL Extra Manual: Page 2-11

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2D10

C. An APRS station with a GPS unit can automatically transmit information to show a mobile station's position during the event

ARRL Extra Manual: Page 2-12

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2D08

A. Unnumbered Information

ARRL Extra Manual: Page 2-12

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2A03

C. The time it takes for a satellite to complete one revolution around the Earth

ARRL Extra Manual: Page 2-13

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2D11

D. Latitude and longitude

ARRL Extra Manual: Page 2-12

Ham Academy Lesson: 1A

Extra Class Questions valid thru 06-30-2016
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E2A12

D. By calculations using the Keplerian elements for the specified satellite

ARRL Extra Manual: Page 2-14

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A13

B. Geostationary

ARRL Extra Manual: Page 2-13

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2A02

A. From north to south

ARRL Extra Manual: Page 2-14

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A01

C. From south to north

ARRL Extra Manual: Page 2-14

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A11

B. A circularly polarized antenna

ARRL Extra Manual: Page 2-15

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2A10

A. Because the satellite is spinning

ARRL Extra Manual: Page 2-15

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A07

D. All of these choices are correct

ARRL Extra Manual: Page 2-16

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A04

B. The satellite's uplink and downlink frequency bands

ARRL Extra Manual: Page 2-16

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2A05

D. The uplink and downlink frequency ranges

ARRL Extra Manual: Page 2-17

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E2A08

B. To avoid reducing the downlink power to all other users

ARRL Extra Manual: Page 2-16

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E2A09

A. The 23 centimeter and 13 centimeter bands

ARRL Extra Manual: Page 2-17

Ham Academy Lesson: 1B

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E2A06

A. 435-438 MHz

ARRL Extra Manual: Page 2-17

Ham Academy Lesson: 1B

Extra Class Questions valid thru 06-30-2016
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E1A02

D. 3 kHz above the lower band edge

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A01

D. 3 kHz below the upper band edge

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A04

C. No, my sidebands will extend beyond the edge of the phone band segment

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A03

C. No, my sidebands will extend beyond the band edge

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A06

B. Operation is restricted to specific emission types and specific channels

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A05

C. 100 watts PEP effective radiated power relative to the gain of a half-wave dipole

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A12

C. No, sidebands from the CW signal will be out of the band.

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1A07

D. 60 meter band

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1B07

B. At the center frequency of the channel

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1B05

D. 2.8 kHz

ARRL Extra Manual: Page 3-4

Ham Academy Lesson: 1C

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E1A09

A. Discontinue forwarding the communication as soon as you become aware of it

ARRL Extra Manual: Page 3-6

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1A08

B. The control operator of the originating station

ARRL Extra Manual: Page 3-6

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1B10

A. All amateur service frequencies authorized to the control operator

ARRL Extra Manual: Page 3-6

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
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E1B09

C. Any FCC-licensed amateur station certified by the responsible civil defense organization for the area served

ARRL Extra Manual: Page 3-6

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1A11

B. Any FCC-issued amateur license or a reciprocal permit for an alien amateur licensee

ARRL Extra Manual: Page 3-7

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1A10

A. Its operation must be approved by the master of the ship or the pilot in command of the aircraft

ARRL Extra Manual: Page 3-7

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1B01

D. An emission outside its necessary bandwidth that can be reduced or eliminated without affecting the information transmitted

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1A13

B. Any person holding an FCC-issued amateur license or who is authorized for alien reciprocal operation

ARRL Extra Manual: Page 3-7

Ham Academy Lesson: 1C

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1B03

A. 1 mile

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1B02

D. The location is of environmental importance or significant in American history, architecture, or culture

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1B08

D. The amateur station must avoid transmitting during certain hours on frequencies that cause the interference

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1B04

C. An Environmental Assessment must be submitted to the FCC

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1B06

A. You may have to notify the Federal Aviation Administration and register it with the FCC as required by Part 17 of FCC rules

ARRL Extra Manual: Page 3-9

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1B11

A. At least 43 dB below

ARRL Extra Manual: Page 3-8

Ham Academy Lesson: 1D

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E1C06

C. A control operator must be present at the control point

ARRL Extra Manual: Page 3-10

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C01

D. A station controlled indirectly through a control link

ARRL Extra Manual: Page 3-10

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1C08

B. 3 minutes

ARRL Extra Manual: Page 3-10

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C07

C. Direct manipulation of the transmitter by a control operator

ARRL Extra Manual: Page 3-10

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C03

B. Under automatic control the control operator is not required to be present at the control point

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C02

A. The use of devices and procedures for control so that the control operator does not have to be present at a control point

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C05

A. Never

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C04

B. Only when transmitting RTTY or data emissions

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

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E1C10

B. Only auxiliary, repeater or space stations

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1C09

D. 29.500 - 29.700 MHz

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1D04

A. An amateur station within 50 km of the Earth's surface intended for communications with amateur stations by means of objects in space

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1D02

C. A radio communications service using amateur radio stations on satellites

ARRL Extra Manual: Page 3-12

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1D03

B. An amateur station that transmits communications to initiate, modify or terminate functions of a space station

ARRL Extra Manual: Page 3-13

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1D01

A. One-way transmission of measurements at a distance from the measuring instrument

ARRL Extra Manual: Page 3-13

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1D06

A. The space station must be capable of terminating transmissions by telecommand when directed by the FCC

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1D05

C. All classes

ARRL Extra Manual: Page 3-13

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1D08

D. 2 meters

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1D07

A. Only 40m, 20m, 17m, 15m, 12m and 10m

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1D11

D. Any amateur station, subject to the privileges of the class of operator license held by the control operator

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1D10

B. Any amateur station so designated by the space station licensee, subject to the privileges of the class of operator license held by the control operator

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1D

Extra Class Questions valid thru 06-30-2016
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E1E02

C. In a question pool maintained by all the VECs

ARRL Extra Manual: Page 3-15

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E03

C. An organization that has entered into an agreement with the FCC to coordinate amateur operator license examinations

ARRL Extra Manual: Page 3-14

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E01

D. 3

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

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E1E04

D. The procedure by which a VEC confirms that the VE applicant meets FCC requirements to serve as an examiner

ARRL Extra Manual: Page 3-15

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E06

C. Each administering VE

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E05

B. Minimum passing score of 74%

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E08

C. Relatives of the VE as listed in the FCC rules

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E07

B. Immediately terminate the candidate's examination

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

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E1E11

B. Three VEs must certify that the examinee is qualified for the license grant and that they have complied with the administering VE requirements

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E10

C. They must submit the application document to the coordinating VEC according to the coordinating VEC instructions

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E14

A. Preparing, processing, administering and coordinating an examination for an amateur radio license

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E12

A. Return the application document to the examinee

ARRL Extra Manual: Page 3-17

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E13

A. The licensee's license will be cancelled

ARRL Extra Manual: Page 3-18

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1E09

A. Revocation of the VE's amateur station license grant and the suspension of the VE's amateur operator license grant

ARRL Extra Manual: Page 3-18

Ham Academy Lesson: 1E

Extra Class Questions valid thru 06-30-2016
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E1F11

D. It must satisfy the FCC's spurious emission standards when operated at the lesser of 1500 watts, or its full output power

ARRL Extra Manual: Page 3-19

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F03

A. It was purchased in used condition from an amateur operator and is sold to another amateur operator for use at that operator's station

ARRL Extra Manual: Page 3-19

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F04

A. A line roughly parallel to and south of the US-Canadian border

ARRL Extra Manual: Page 3-20

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F12

B. Only Technician, General, Advanced or Amateur Extra Class operators

ARRL Extra Manual: Page 3-19

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F06

C. An area surrounding the National Radio Astronomy Observatory

ARRL Extra Manual: Page 3-20

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1F05

D. 420 - 430 MHz

ARRL Extra Manual: Page 3-20

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E1F13

C. Communications incidental to the purpose of the amateur service and remarks of a personal nature

ARRL Extra Manual: Page 3-20

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F07

D. When neither the amateur nor his or her employer has a pecuniary interest in the communications

ARRL Extra Manual: Page 3-20

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F02

A. CEPT agreement

ARRL Extra Manual: Page 3-21

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F01

B. Only on amateur frequencies above 222 MHz

ARRL Extra Manual: Page 3-21

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F09

D. All of these choices are correct

ARRL Extra Manual: Page 3-21

Ham Academy Lesson: 1F

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E1F08

A. Communications transmitted for hire or material compensation, except as otherwise provided in the rules

ARRL Extra Manual: Page 3-21

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F14

A. To provide for experimental amateur communications

ARRL Extra Manual: Page 3-22

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E1F10

C. 10 W

ARRL Extra Manual: Page 3-21

Ham Academy Lesson: 1F

Extra Class Questions valid thru 06-30-2016
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E5D04

B. Joule

ARRL Extra Manual: Page 4-5

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5C11

C. The coordinate values along the horizontal and vertical axes

ARRL Extra Manual: Page 4-2

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5D08

B. Potential energy

ARRL Extra Manual: Page 4-5

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5D05

B. Electric current

ARRL Extra Manual: Page 4-5

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5D06

D. In a direction determined by the left-hand rule

ARRL Extra Manual: Page 4-6

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5D03

C. A capacitor

ARRL Extra Manual: Page 4-6

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B01

B. One time constant

ARRL Extra Manual: Page 4-9

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5D07

D. The amount of current

ARRL Extra Manual: Page 4-7

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B03

D. 13.5%

ARRL Extra Manual: Page 4-9

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B02

D. One time constant

ARRL Extra Manual: Page 4-9

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B04

D. 220 seconds

ARRL Extra Manual: Page 4-11

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B05

A. 0.02 seconds

ARRL Extra Manual: Page 4-10

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B09

D. Current leads voltage by 90 degrees

ARRL Extra Manual: Page 4-14

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5B06

C. 450 seconds

ARRL Extra Manual: Page 4-11

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E5C09

A. Resistive component

ARRL Extra Manual: Page 4-17

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E5B10

A. Voltage leads current by 90 degrees

ARRL Extra Manual: Page 4-14

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5C13

D. Rectangular coordinates

ARRL Extra Manual: Page 4-17

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5C10

B. Reactive component

ARRL Extra Manual: Page 4-17

Ham Academy Lesson: 2A

Extra Class Questions valid thru 06-30-2016
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E5C12

D. It is equivalent to a pure resistance

ARRL Extra Manual: Page 4-18

Ham Academy Lesson: 2A

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E5C14

D. Polar coordinates

ARRL Extra Manual: Page 4-17

Ham Academy Lesson: 2A

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E5C01

B. 141 ohms at an angle of 45 degrees

ARRL Extra Manual: Page 4-19

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C15

A. 141 ohms at an angle of -45 degrees

ARRL Extra Manual: Page 4-18

Ham Academy Lesson: 2B

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E5C17

C. $173 + j100$ ohms

ARRL Extra Manual: Page 4-19

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C16

B. 141 ohms at an angle of -45 degrees

ARRL Extra Manual: Page 4-19

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C08

B. 500 ohms at an angle of 37 degrees

ARRL Extra Manual: Page 4-20

Ham Academy Lesson: 2B

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E5C06

D. 141 ohms at an angle of -45 degrees

ARRL Extra Manual: Page 4-20

Ham Academy Lesson: 2B

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E5C22

A. $40 + j31,400$

ARRL Extra Manual: Page 4-21

Ham Academy Lesson: 2B

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E5C20

B. Point 3

ARRL Extra Manual: Page 4-21

Ham Academy Lesson: 2B

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E5C19

B. Point 4

ARRL Extra Manual: Page 4-22

Ham Academy Lesson: 2B

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E5C04

D. 500 ohms at an angle of -53.1 degrees

ARRL Extra Manual: Page 4-22

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C02

D. 100 ohms at an angle of 0 degrees

ARRL Extra Manual: Page 4-23

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C21

A. Point 1

ARRL Extra Manual: Page 4-22

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C03

A. 500 ohms at an angle of 37 degrees

ARRL Extra Manual: Page 4-24

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C18

B. 5 ohms at an angle of 37 degrees

ARRL Extra Manual: Page 4-23

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C07

C. 71 ohms at an angle of -45 degrees

ARRL Extra Manual: Page 4-25

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5C05

A. 240 ohms at an angle of 36.9 degrees

ARRL Extra Manual: Page 4-24

Ham Academy Lesson: 2B

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E5C23

D. Point 8

ARRL Extra Manual: Page 4-26

Ham Academy Lesson: 2B

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E5B07

C. 14.0 degrees with the voltage lagging the current

ARRL Extra Manual: Page 4-26

Ham Academy Lesson: 2B

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E5B11

B. 14 degrees with the voltage leading the current

ARRL Extra Manual: Page 4-27

Ham Academy Lesson: 2B

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E5B08

A. 14 degrees with the voltage lagging the current

ARRL Extra Manual: Page 4-27

Ham Academy Lesson: 2B

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E5B13

D. 14.04 degrees with the voltage leading the current

ARRL Extra Manual: Page 4-28

Ham Academy Lesson: 2B

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E5B12

C. 14 degrees with the voltage lagging the current

ARRL Extra Manual: Page 4-28

Ham Academy Lesson: 2B

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E5D14

A. Wattless, nonproductive power

ARRL Extra Manual: Page 4-29

Ham Academy Lesson: 2B

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E5D09

B. It is repeatedly exchanged between the associated magnetic and electric fields, but is not dissipated

ARRL Extra Manual: Page 4-29

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5D11

C. 0.5

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

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E5D10

A. By multiplying the apparent power times the power factor

ARRL Extra Manual: Page 4-30

Ham Academy Lesson: 2B

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E5D13

B. 100 Watts

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

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E5D12

B. 80 watts

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

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E5D16

C. 0.866

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5D15

D. 0.707

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5A02

C. The frequency at which the capacitive reactance equals the inductive reactance

ARRL Extra Manual: Page 4-32

Ham Academy Lesson: 2B

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E5D17

D. 600 watts

ARRL Extra Manual: Page 4-31

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5A01

A. Resonance

ARRL Extra Manual: Page 4-33

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5D18

B. 355 W

ARRL Extra Manual: Page 4-32

Ham Academy Lesson: 2B

Extra Class Questions valid thru 06-30-2016
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E5A05

B. Maximum

ARRL Extra Manual: Page 4-33

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5A03

D. Approximately equal to circuit resistance

ARRL Extra Manual: Page 4-33

Ham Academy Lesson: 2C

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E5A04

A. Approximately equal to circuit resistance

ARRL Extra Manual: Page 4-34

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5A14

C. 3.56 MHz

ARRL Extra Manual: Page 4-33

Ham Academy Lesson: 2C

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E5A07

A. Minimum

ARRL Extra Manual: Page 4-34

Ham Academy Lesson: 2C

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E5A06

B. It is at a maximum

ARRL Extra Manual: Page 4-34

Ham Academy Lesson: 2C

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E5A08

C. The voltage and current are in phase

ARRL Extra Manual: Page 4-35

Ham Academy Lesson: 2C

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E5A15

B. 1.78 MHz

ARRL Extra Manual: Page 4-34

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5A16

D. 7.12 MHz

ARRL Extra Manual: Page 4-35

Ham Academy Lesson: 2C

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E5A09

C. The voltage and current are in phase

ARRL Extra Manual: Page 4-35

Ham Academy Lesson: 2C

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E4B15

C. The bandwidth of the circuit's frequency response

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E5A17

A. 10.1 MHz

ARRL Extra Manual: Page 4-35

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5A11

C. 47.3 kHz

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E5A10

A. 18.9 kHz

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E5A13

B. 76.2 kHz

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E5A12

C. 31.4 kHz

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E5D02

C. Because of skin effect

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E5D01

A. As frequency increases, RF current flows in a thinner layer of the conductor, closer to the surface

ARRL Extra Manual: Page 4-37

Ham Academy Lesson: 2C

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E6D08

B. Powdered-iron toroids generally maintain their characteristics at higher currents

ARRL Extra Manual: Page 4-38

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E6D06

D. Permeability

ARRL Extra Manual: Page 4-38

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E6D07

B. From less than 20 Hz to approximately 300 MHz

ARRL Extra Manual: Page 4-39

Ham Academy Lesson: 2C

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E6D16

C. Ferrite toroids generally require fewer turns to produce a given inductance value

ARRL Extra Manual: Page 4-38

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E6D11

C. 43 turns

ARRL Extra Manual: Page 4-40

Ham Academy Lesson: 2C

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E6D10

A. Toroidal cores confine most of the magnetic field within the core material

ARRL Extra Manual: Page 4-39

Ham Academy Lesson: 2C

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E6D09

C. Ferrite beads

ARRL Extra Manual: Page 4-41

Ham Academy Lesson: 2C

Extra Class Questions valid thru 06-30-2016
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E6D12

A. 35 turns

ARRL Extra Manual: Page 4-40

Ham Academy Lesson: 2C

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E6A04

C. Acceptor impurity

ARRL Extra Manual: Page 5-2

Ham Academy Lesson: 3A

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E6A02

A. N-type

ARRL Extra Manual: Page 5-2

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6A01

C. At microwave frequencies

ARRL Extra Manual: Page 5-3

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6A15

B. P-type

ARRL Extra Manual: Page 5-2

Ham Academy Lesson: 3A

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E6A16

B. Free electrons

ARRL Extra Manual: Page 5-3

Ham Academy Lesson: 3A

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E6A03

C. Holes

ARRL Extra Manual: Page 5-3

Ham Academy Lesson: 3A

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E6B07

B. Excessive junction temperature

ARRL Extra Manual: Page 5-5

Ham Academy Lesson: 3A

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E6B02

D. Less forward voltage drop

ARRL Extra Manual: Page 5-5

Ham Academy Lesson: 3A

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E6B06

D. As a VHF / UHF mixer or detector

ARRL Extra Manual: Page 5-6

Ham Academy Lesson: 3A

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E6B08

A. Metal-semiconductor junction

ARRL Extra Manual: Page 5-5

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6B01

B. A constant voltage drop under conditions of varying current

ARRL Extra Manual: Page 5-7

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6B09

C. As an RF detector

ARRL Extra Manual: Page 5-6

Ham Academy Lesson: 3A

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E6B04

A. Varactor diode

ARRL Extra Manual: Page 5-7

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6B03

C. Tunnel

ARRL Extra Manual: Page 5-7

Ham Academy Lesson: 3A

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E6B05

D. A large region of intrinsic material

ARRL Extra Manual: Page 5-8

Ham Academy Lesson: 3A

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E6A07

A. 1

ARRL Extra Manual: Page 5-8

Ham Academy Lesson: 3A

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E6B12

C. As an RF switch

ARRL Extra Manual: Page 5-8

Ham Academy Lesson: 3A

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E6B11

A. Forward DC bias current

ARRL Extra Manual: Page 5-8

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6A06

B. The change in collector current with respect to base current

ARRL Extra Manual: Page 5-9

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6A05

C. The change of collector current with respect to emitter current

ARRL Extra Manual: Page 5-9

Ham Academy Lesson: 3A

Extra Class Questions valid thru 06-30-2016
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E6A17

D. Gate, drain, source

ARRL Extra Manual: Page 5-10

Ham Academy Lesson: 3B

Extra Class Questions valid thru 06-30-2016
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E6A08

D. Alpha cutoff frequency

ARRL Extra Manual: Page 5-10

Ham Academy Lesson: 3A

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E6A11

A. 1

ARRL Extra Manual: Page 5-11

Ham Academy Lesson: 3B

Extra Class Questions valid thru 06-30-2016
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E6A10

B. 4

ARRL Extra Manual: Page 5-11

Ham Academy Lesson: 3B

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E6A14

C. An FET has high input impedance; a bipolar transistor has low input impedance

ARRL Extra Manual: Page 5-11

Ham Academy Lesson: 3B

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E6A12

D. To reduce the chance of the gate insulation being punctured by static discharges or excessive voltages

ARRL Extra Manual: Page 5-11

Ham Academy Lesson: 3B

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E6E08

A. Through a resistor and/or RF choke connected to the amplifier output lead

ARRL Extra Manual: Page 5-12

Ham Academy Lesson: 3B

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E6A09

A. An FET that exhibits a current flow between source and drain when no gate voltage is applied

ARRL Extra Manual: Page 5-12

Ham Academy Lesson: 3B

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E6E04

A. 50 ohms

ARRL Extra Manual: Page 5-13

Ham Academy Lesson: 3B

Extra Class Questions valid thru 06-30-2016
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E6B13

B. Forward bias

ARRL Extra Manual: Page 5-13

Ham Academy Lesson: 3B

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E6E07

B. Microstrip construction

ARRL Extra Manual: Page 5-13

Ham Academy Lesson: 3B

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E6E06

D. Controlled gain, low noise figure, and constant input and output impedance over the specified frequency range

ARRL Extra Manual: Page 5-13

Ham Academy Lesson: 3B

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E6B10

B. 5

ARRL Extra Manual: Page 5-14

Ham Academy Lesson: 3B

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E6E11

D. Gallium nitride

ARRL Extra Manual: Page 5-13

Ham Academy Lesson: 3B

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E6D15

A. They consume less power

ARRL Extra Manual: Page 5-14

Ham Academy Lesson: 3B

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E6D05

B. A display using a crystalline liquid which, in conjunction with polarizing filters, becomes opaque when voltage is applied

ARRL Extra Manual: Page 5-14

Ham Academy Lesson: 3B

Extra Class Questions valid thru 06-30-2016
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E6D01

D. The length of time the image remains on the screen after the beam is turned off

ARRL Extra Manual: Page 5-16

Ham Academy Lesson: 3B

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E6D13

D. Electrostatic

ARRL Extra Manual: Page 5-15

Ham Academy Lesson: 3B

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E6D03

C. It samples an analog signal and passes it in stages from the input to the output

ARRL Extra Manual: Page 5-16

Ham Academy Lesson: 3B

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E6D02

B. The anode voltage

ARRL Extra Manual: Page 5-16

Ham Academy Lesson: 3B

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E6D04

A. It stores photogenerated charges as signals corresponding to pixels

ARRL Extra Manual: Page 5-17

Ham Academy Lesson: 3B

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E6D14

C. It is commonly used as an analog-to-digital converter

ARRL Extra Manual: Page 5-16

Ham Academy Lesson: 3B

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E7A10

C. A list of inputs and corresponding outputs for a digital device

ARRL Extra Manual: Page 5-18

Ham Academy Lesson: 3B

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E6C11

C. 5

ARRL Extra Manual: Page 5-18

Ham Academy Lesson: 3B

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E6C08

B. 2

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E6C07

A. 1

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E6C10

D. 4

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E6C09

B. 3

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E7A08

A. It produces a logic "1" at its output if any or all inputs are logic "1"

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E7A07

D. It produces a logic "0" at its output only when all inputs are logic "1"

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E6C03

A. Logic devices with 0, 1, and high impedance output states

ARRL Extra Manual: Page 5-20

Ham Academy Lesson: 3C

Extra Class Questions valid thru 06-30-2016
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E7A09

C. It produces a logic "0" at its output if any single input is a logic "1"

ARRL Extra Manual: Page 5-19

Ham Academy Lesson: 3B

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E7A11

D. Positive Logic

ARRL Extra Manual: Page 5-20

Ham Academy Lesson: 3C

Extra Class Questions valid thru 06-30-2016
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E6C04

B. Ability to connect many device outputs to a common bus

ARRL Extra Manual: Page 5-20

Ham Academy Lesson: 3C

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E7A01

C. A flip-flop

ARRL Extra Manual: Page 5-21

Ham Academy Lesson: 3C

Extra Class Questions valid thru 06-30-2016
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E7A12

C. Negative logic

ARRL Extra Manual: Page 5-20

Ham Academy Lesson: 3C

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E7A13

B. A set/reset flip-flop whose output is low when R is high and S is low, high when S is high and R is low, and unchanged when both inputs are low

ARRL Extra Manual: Page 5-23

Ham Academy Lesson: 3C

Extra Class Questions valid thru 06-30-2016
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E7A02

C. Two

ARRL Extra Manual: Page 5-23

Ham Academy Lesson: 3C

Extra Class Questions valid thru 06-30-2016
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E7A03

B. A flip-flop

ARRL Extra Manual: Page 5-24

Ham Academy Lesson: 3C

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E7A15

A. A flip-flop whose output takes on the state of the D input when the clock signal transitions from low to high

ARRL Extra Manual: Page 5-23

Ham Academy Lesson: 3C

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E7A05

D. Astable multivibrator

ARRL Extra Manual: Page 5-24

Ham Academy Lesson: 3C

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E7A04

B. 2

ARRL Extra Manual: Page 5-24

Ham Academy Lesson: 3C

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E7A14

A. A flip-flop similar to an RS except that it toggles when both J and K are high

ARRL Extra Manual: Page 5-24

Ham Academy Lesson: 3C

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E7A06

A. It switches momentarily to the opposite binary state and then returns, after a set time, to its original state

ARRL Extra Manual: Page 5-24

Ham Academy Lesson: 3C

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E7F02

B. A prescaler

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3C

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E7F01

D. It divides a higher frequency signal so a low-frequency counter can display the input frequency

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3C

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E7F07

A. The accuracy of the time base

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3D

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E7F03

A. It produces one output pulse for every ten input pulses

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3D

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E7F09

A. To provide a digital representation of the frequency of a signal

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3D

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E7F08

C. Counting the number of input pulses occurring within a specific period of time

ARRL Extra Manual: Page 5-25

Ham Academy Lesson: 3D

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E7F05

D. All of these choices are correct

ARRL Extra Manual: Page 5-26

Ham Academy Lesson: 3D

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E7F04

C. Two flip-flops

ARRL Extra Manual: Page 5-26

Ham Academy Lesson: 3D

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E7F10

B. Period measurement plus mathematical computation

ARRL Extra Manual: Page 5-26

Ham Academy Lesson: 3D

Extra Class Questions valid thru 06-30-2016
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E7F06

C. To provide a means of calibrating a receiver's frequency settings

ARRL Extra Manual: Page 5-26

Ham Academy Lesson: 3D

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E6A13

C. Complementary Metal-Oxide Semiconductor

ARRL Extra Manual: Page 5-28

Ham Academy Lesson: 3D

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E7F11

C. It provides improved resolution of low-frequency signals within a comparable time period

ARRL Extra Manual: Page 5-26

Ham Academy Lesson: 3D

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E6C02

A. A logic-high state

ARRL Extra Manual: Page 5-28

Ham Academy Lesson: 3D

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E6C01

C. 5 volts

ARRL Extra Manual: Page 5-28

Ham Academy Lesson: 3D

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E6C06

C. The input switching threshold is about one-half the power supply voltage

ARRL Extra Manual: Page 5-29

Ham Academy Lesson: 3D

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E6C05

D. Lower power consumption

ARRL Extra Manual: Page 5-28

Ham Academy Lesson: 3D

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E6C13

C. It has the high input impedance of CMOS and the low output impedance of bipolar transistors

ARRL Extra Manual: Page 5-29

Ham Academy Lesson: 3D

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E6C12

D. An integrated circuit logic family using both bipolar and CMOS transistors

ARRL Extra Manual: Page 5-29

Ham Academy Lesson: 3D

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E6F02

A. It increases

ARRL Extra Manual: Page 5-31

Ham Academy Lesson: 3D

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E6F01

B. The increased conductivity of an illuminated semiconductor

ARRL Extra Manual: Page 5-31

Ham Academy Lesson: 3D

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E6F03

D. An LED and a phototransistor

ARRL Extra Manual: Page 5-32

Ham Academy Lesson: 3D

Extra Class Questions valid thru 06-30-2016
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E6F06

A. A crystalline semiconductor

ARRL Extra Manual: Page 5-31

Ham Academy Lesson: 3D

Extra Class Questions valid thru 06-30-2016
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E6F07

B. A device that uses semiconductor devices to implement the functions of an electromechanical relay

ARRL Extra Manual: Page 5-32

Ham Academy Lesson: 3D

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E6F05

A. A device which detects rotation of a control by interrupting a light source with a patterned wheel

ARRL Extra Manual: Page 5-32

Ham Academy Lesson: 3D

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E6F04

B. The conversion of light to electrical energy

ARRL Extra Manual: Page 5-33

Ham Academy Lesson: 3D

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E6F08

C. Optoisolators provide a very high degree of electrical isolation between a control circuit and the circuit being switched

ARRL Extra Manual: Page 5-32

Ham Academy Lesson: 3D

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E6F10

B. Silicon

ARRL Extra Manual: Page 5-33

Ham Academy Lesson: 3D

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E6F09

D. The relative fraction of light that is converted to current

ARRL Extra Manual: Page 5-33

Ham Academy Lesson: 3D

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E6F12

C. Electrons

ARRL Extra Manual: Page 5-33

Ham Academy Lesson: 3D

Extra Class Questions valid thru 06-30-2016
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E6F11

B. 0.5 V

ARRL Extra Manual: Page 5-33

Ham Academy Lesson: 3D

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E7B11

D. Self bias

ARRL Extra Manual: Page 6-3

Ham Academy Lesson: 4A

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E7B10

B. Fixed bias

ARRL Extra Manual: Page 6-3

Ham Academy Lesson: 4A

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E7B15

C. Use a resistor in series with the emitter

ARRL Extra Manual: Page 6-3

Ham Academy Lesson: 4A

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E7B12

C. Common emitter amplifier

ARRL Extra Manual: Page 6-3

Ham Academy Lesson: 4A

Extra Class Questions valid thru 06-30-2016
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E7B14

A. Output coupling

ARRL Extra Manual: Page 6-5

Ham Academy Lesson: 4A

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E7B13

A. Emitter load

ARRL Extra Manual: Page 6-5

Ham Academy Lesson: 4A

Extra Class Questions valid thru 06-30-2016
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E7G12

A. A high-gain, direct-coupled differential amplifier with very high input and very low output impedance

ARRL Extra Manual: Page 6-6

Ham Academy Lesson: 4A

Extra Class Questions valid thru 06-30-2016
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E7B18

C. Low input impedance

ARRL Extra Manual: Page 6-6

Ham Academy Lesson: 4A

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E7G14

D. Very high

ARRL Extra Manual: Page 6-7

Ham Academy Lesson: 4A

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E7G08

D. It does not vary with frequency

ARRL Extra Manual: Page 6-7

Ham Academy Lesson: 4A

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E7G13

C. The input voltage needed to bring the open-loop output voltage to zero

ARRL Extra Manual: Page 6-8

Ham Academy Lesson: 4A

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E7G15

A. Very low

ARRL Extra Manual: Page 6-7

Ham Academy Lesson: 4A

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E7G09

D. -2.3 volts

ARRL Extra Manual: Page 6-9

Ham Academy Lesson: 4A

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E7G07

C. 47

ARRL Extra Manual: Page 6-9

Ham Academy Lesson: 4A

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E7G11

B. 14

ARRL Extra Manual: Page 6-9

Ham Academy Lesson: 4A

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E7G10

C. 38

ARRL Extra Manual: Page 6-9

Ham Academy Lesson: 4A

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E7B04

A. Approximately half-way between saturation and cutoff

ARRL Extra Manual: Page 6-11

Ham Academy Lesson: 4A

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E7B01

A. More than 180 degrees but less than 360 degrees

ARRL Extra Manual: Page 6-11

Ham Academy Lesson: 4A

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E7B03

A. A low-pass filter to remove switching signal components

ARRL Extra Manual: Page 6-12

Ham Academy Lesson: 4A

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E7B02

A. A type of amplifier that uses switching technology to achieve high efficiency

ARRL Extra Manual: Page 6-12

Ham Academy Lesson: 4A

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E7B17

A. Because they are relatively close in frequency to the desired signal

ARRL Extra Manual: Page 6-12

Ham Academy Lesson: 4B

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E7B16

A. Transmission of spurious signals

ARRL Extra Manual: Page 6-12

Ham Academy Lesson: 4B

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E7B07

D. Signal distortion and excessive bandwidth

ARRL Extra Manual: Page 6-13

Ham Academy Lesson: 4B

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E7B06

B. Push-pull

ARRL Extra Manual: Page 6-13

Ham Academy Lesson: 4B

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E7B08

C. By feeding a 180-degree out-of-phase portion of the output back to the input

ARRL Extra Manual: Page 6-14

Ham Academy Lesson: 4B

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E7B05

C. Install parasitic suppressors and/or neutralize the stage

ARRL Extra Manual: Page 6-14

Ham Academy Lesson: 4B

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E7B20

B. A low-noise VHF or UHF amplifier relying on varying reactance for amplification

ARRL Extra Manual: Page 6-16

Ham Academy Lesson: 4B

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E7B19

D. A VHF, UHF, or microwave vacuum tube that uses velocity modulation

ARRL Extra Manual: Page 6-15

Ham Academy Lesson: 4B

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E7H02

C. It must have positive feedback with a gain greater than 1

ARRL Extra Manual: Page 6-17

Ham Academy Lesson: 4B

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E7B21

A. Field effect transistor

ARRL Extra Manual: Page 6-16

Ham Academy Lesson: 4B

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E7H03

A. Through a tapped coil

ARRL Extra Manual: Page 6-18

Ham Academy Lesson: 4B

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E7H01

D. Colpitts, Hartley and Pierce

ARRL Extra Manual: Page 6-18

Ham Academy Lesson: 4B

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E7H05

D. Through a quartz crystal

ARRL Extra Manual: Page 6-18

Ham Academy Lesson: 4B

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E7H04

C. Through a capacitive divider

ARRL Extra Manual: Page 6-18

Ham Academy Lesson: 4B

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E6E09

B. Provide the crystal with a specified parallel capacitance

ARRL Extra Manual: Page 6-19

Ham Academy Lesson: 4B

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E6E03

A. Physical deformation of a crystal by the application of a voltage

ARRL Extra Manual: Page 6-19

Ham Academy Lesson: 4B

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E7H07

C. A UHF or microwave oscillator consisting of a diode vacuum tube with a specially shaped anode, surrounded by an external magnet

ARRL Extra Manual: Page 6-20

Ham Academy Lesson: 4B

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E7H06

B. Colpitts and Hartley

ARRL Extra Manual: Page 6-20

Ham Academy Lesson: 4B

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E8A14

A. Sequential sampling

ARRL Extra Manual: Page 6-21

Ham Academy Lesson: 4B

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E7H08

A. An oscillator based on the negative resistance properties of properly-doped semiconductors

ARRL Extra Manual: Page 6-20

Ham Academy Lesson: 4B

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E7E09

A. Spurious mixer products are generated

ARRL Extra Manual: Page 6-25

Ham Academy Lesson: 4B

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E7E08

C. The two input frequencies along with their sum and difference frequencies

ARRL Extra Manual: Page 6-25

Ham Academy Lesson: 4B

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E7E04

A. By using a balanced modulator followed by a filter

ARRL Extra Manual: Page 6-28

Ham Academy Lesson: 4B

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E7E07

B. The frequency components present in the modulating signal

ARRL Extra Manual: Page 6-27

Ham Academy Lesson: 4B

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E7E13

D. The quadrature method

ARRL Extra Manual: Page 6-29

Ham Academy Lesson: 4C

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E7C09

C. A Hilbert-transform filter

ARRL Extra Manual: Page 6-29

Ham Academy Lesson: 4C

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E7E02

D. To produce PM signals by using an electrically variable inductance or capacitance

ARRL Extra Manual: Page 6-30

Ham Academy Lesson: 4C

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E7E01

B. A reactance modulator on the oscillator

ARRL Extra Manual: Page 6-30

Ham Academy Lesson: 4C

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E7E05

D. A pre-emphasis network

ARRL Extra Manual: Page 6-31

Ham Academy Lesson: 4C

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E7E03

C. By varying the tuning of an amplifier tank circuit to produce PM signals

ARRL Extra Manual: Page 6-30

Ham Academy Lesson: 4C

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E7E10

A. By rectification and filtering of RF signals

ARRL Extra Manual: Page 6-31

Ham Academy Lesson: 4C

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E7E06

A. For compatibility with transmitters using phase modulation

ARRL Extra Manual: Page 6-31

Ham Academy Lesson: 4C

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E7E14

C. Incoming RF is mixed to "baseband" for analog-to-digital conversion and subsequent processing

ARRL Extra Manual: Page 6-32

Ham Academy Lesson: 4C

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E7E11

C. Product detector

ARRL Extra Manual: Page 6-32

Ham Academy Lesson: 4C

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E7H13

A. The frequency range over which the circuit can lock

ARRL Extra Manual: Page 6-34

Ham Academy Lesson: 4C

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E7E12

D. A circuit for detecting FM signals

ARRL Extra Manual: Page 6-33

Ham Academy Lesson: 4C

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E7H17

C. It makes it possible for a VFO to have the same degree of frequency stability as a crystal oscillator

ARRL Extra Manual: Page 6-34

Ham Academy Lesson: 4C

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E7H14

C. An electronic servo loop consisting of a phase detector, a low-pass filter, a voltage-controlled oscillator, and a stable reference oscillator

ARRL Extra Manual: Page 6-34

Ham Academy Lesson: 4C

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E7H10

B. The amplitude values that represent a sine-wave output

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H09

A. A direct digital synthesizer

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H15

D. Frequency synthesis, FM demodulation

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H12

D. Phase accumulator

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H18

A. Phase noise

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H16

B. Any phase variations in the reference oscillator signal will produce phase noise in the synthesizer output

ARRL Extra Manual: Page 6-35

Ham Academy Lesson: 4C

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E7H11

C. Spurious signals at discrete frequencies

ARRL Extra Manual: Page 6-36

Ham Academy Lesson: 4C

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E7C10

B. A cavity filter

ARRL Extra Manual: Page 6-36

Ham Academy Lesson: 4C

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E7C06

C. Extremely sharp cutoff with one or more notches in the stop band

ARRL Extra Manual: Page 6-38

Ham Academy Lesson: 4C

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E7C05

D. A Chebyshev filter

ARRL Extra Manual: Page 6-38

Ham Academy Lesson: 4C

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E7C14

C. Digital

ARRL Extra Manual: Page 6-38

Ham Academy Lesson: 4C

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E7C07

B. A notch filter

ARRL Extra Manual: Page 6-38

Ham Academy Lesson: 4C

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E6E01

D. A filter with narrow bandwidth and steep skirts made using quartz crystals

ARRL Extra Manual: Page 6-39

Ham Academy Lesson: 4C

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E7G02

D. Undesired oscillations added to the desired signal

ARRL Extra Manual: Page 6-38

Ham Academy Lesson: 4C

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E6E12

B. A variable bandwidth crystal lattice filter

ARRL Extra Manual: Page 6-39

Ham Academy Lesson: 4C

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E6E02

A. The relative frequencies of the individual crystals

ARRL Extra Manual: Page 6-39

Ham Academy Lesson: 4C

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E7G03

D. Op-amps exhibit gain rather than insertion loss

ARRL Extra Manual: Page 6-39

Ham Academy Lesson: 4C

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E7G01

B. The values of capacitors and resistors external to the op-amp

ARRL Extra Manual: Page 6-39

Ham Academy Lesson: 4C

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E7G05

A. Restrict both gain and Q

ARRL Extra Manual: Page 6-40

Ham Academy Lesson: 4D

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E7G04

C. Polystyrene

ARRL Extra Manual: Page 6-40

Ham Academy Lesson: 4D

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E7C08

A. An adaptive filter

ARRL Extra Manual: Page 6-41

Ham Academy Lesson: 4D

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E7G06

D. As an audio filter in a receiver

ARRL Extra Manual: Page 6-40

Ham Academy Lesson: 4D

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E7B09

D. The tuning capacitor is adjusted for minimum plate current, while the loading capacitor is adjusted for maximum permissible plate current

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7C04

C. It cancels the reactive part of the impedance and changes the resistive part to a desired value

ARRL Extra Manual: Page 6-42

Ham Academy Lesson: 4D

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E7C03

A. Greater harmonic suppression

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7C01

D. A capacitor is connected between the input and ground, another capacitor is connected between the output and ground, and an inductor is connected between input and output

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7C12

B. A Pi network with an additional series inductor on the output

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7C11

D. Pi

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7C02

C. It is a high-pass filter

ARRL Extra Manual: Page 6-44

Ham Academy Lesson: 4D

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E7C13

A. The Q of Pi networks can be varied depending on the component values chosen

ARRL Extra Manual: Page 6-43

Ham Academy Lesson: 4D

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E7D05

D. A shunt regulator

ARRL Extra Manual: Page 6-44

Ham Academy Lesson: 4D

Extra Class Questions valid thru 06-30-2016
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E7D01

D. The conduction of a control element is varied to maintain a constant output voltage

ARRL Extra Manual: Page 6-44

Ham Academy Lesson: 4D

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E7D12

D. It provides a constant minimum load for Q1

ARRL Extra Manual: Page 6-44

Ham Academy Lesson: 4D

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E7D08

C. Linear voltage regulator

ARRL Extra Manual: Page 6-44

Ham Academy Lesson: 4D

Extra Class Questions valid thru 06-30-2016
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E7D04

B. A series regulator

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

Extra Class Questions valid thru 06-30-2016
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E7D03

A. A Zener diode

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D07

A. It bypasses hum around D1

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D06

C. It increases the current-handling capability of the regulator

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D10

A. It prevents self-oscillation

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D09

D. It filters the supply voltage

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D13

B. To provide a voltage reference

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D11

C. It supplies current to D1

ARRL Extra Manual: Page 6-45

Ham Academy Lesson: 4D

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E7D15

D. To allow the filter capacitors to charge gradually

ARRL Extra Manual: Page 6-46

Ham Academy Lesson: 4D

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E7D02

C. The control device's duty cycle is controlled to produce a constant average output voltage

ARRL Extra Manual: Page 6-46

Ham Academy Lesson: 4D

Extra Class Questions valid thru 06-30-2016
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E7D17

C. The high frequency inverter design uses much smaller transformers and filter components for an equivalent power output

ARRL Extra Manual: Page 6-46

Ham Academy Lesson: 4D

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E7D16

D. All of these choices are correct

ARRL Extra Manual: Page 6-46

Ham Academy Lesson: 4D

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E8A08

A. The time required to complete one cycle

ARRL Extra Manual: Page 7-2

Ham Academy Lesson: 5A

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E7D14

C. To improve output voltage regulation

ARRL Extra Manual: Page 6-47

Ham Academy Lesson: 4D

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E8A01

A. A square wave

ARRL Extra Manual: Page 7-4

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8A09

C. Irregular

ARRL Extra Manual: Page 7-3

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8A03

A. A sawtooth wave

ARRL Extra Manual: Page 7-4

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8A02

C. A sawtooth wave

ARRL Extra Manual: Page 7-4

Ham Academy Lesson: 5A

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E8A04

C. The DC voltage causing the same amount of heating in a resistor as the corresponding RMS AC voltage

ARRL Extra Manual: Page 7-5

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8A10

B. Narrow bursts of energy separated by periods of no signal

ARRL Extra Manual: Page 7-4

Ham Academy Lesson: 5A

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E8D02

B. 2:1

ARRL Extra Manual: Page 7-5

Ham Academy Lesson: 5A

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E8A05

D. By measuring the heating effect in a known resistor

ARRL Extra Manual: Page 7-5

Ham Academy Lesson: 5A

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E8D05

D. 184 volts

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

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E8D03

A. Peak voltage

ARRL Extra Manual: Page 7-5

Ham Academy Lesson: 5A

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E8D13

B. 170 volts

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

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E8D12

D. 48 volts

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

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E8D15

A. 120V AC

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8D14

C. 340 volts

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
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E8D11

A. 12.2 watts

ARRL Extra Manual: Page 7-6*

Ham Academy Lesson: 5A

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E8D16

A. 120V AC

ARRL Extra Manual: Page 7-6

Ham Academy Lesson: 5A

Extra Class Questions valid thru 06-30-2016
Emergency Amateur Radio Club - www.earchi.org/education

E8D04

B. 9 watts

ARRL Extra Manual: Page 7-8

Ham Academy Lesson: 5A

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E8A07

B. The characteristics of the modulating signal

ARRL Extra Manual: Page 7-8

Ham Academy Lesson: 5A

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E8D10

D. A peak-reading wattmeter

ARRL Extra Manual: Page 7-8

Ham Academy Lesson: 5A

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E8D06

B. It gives a more accurate display of the PEP output when modulation is present

ARRL Extra Manual: Page 7-8

Ham Academy Lesson: 5A

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E8D07

C. A wave consisting of an electric field and a magnetic field oscillating at right angles to each other

ARRL Extra Manual: Page 7-9

Ham Academy Lesson: 5A

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E8A06

A. 2.5 to 1

ARRL Extra Manual: Page 7-9

Ham Academy Lesson: 5A

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E8D09

B. Waves with a rotating electric field

ARRL Extra Manual: Page 7-11

Ham Academy Lesson: 5A

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E8D08

D. Changing electric and magnetic fields propagate the energy

ARRL Extra Manual: Page 7-9

Ham Academy Lesson: 5A

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E4B12

A. The full scale reading of the voltmeter multiplied by its ohms per volt rating will provide the input impedance of the voltmeter

ARRL Extra Manual: Page 7-12

Ham Academy Lesson: 5B

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E4B08

C. High impedance input

ARRL Extra Manual: Page 7-12

Ham Academy Lesson: 5B

Extra Class Questions valid thru 06-30-2016
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E4B14

B. A less accurate reading results

ARRL Extra Manual: Page 7-13

Ham Academy Lesson: 5B

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E4B02

C. The measurement is based on obtaining a signal null, which can be done very precisely

ARRL Extra Manual: Page 7-13

Ham Academy Lesson: 5B

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E4B03

C. 146.52 Hz

ARRL Extra Manual: Page 7-15

Ham Academy Lesson: 5B

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E4B01

B. Time base accuracy

ARRL Extra Manual: Page 7-14

Ham Academy Lesson: 5B

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E4B05

D. 1465.20 Hz

ARRL Extra Manual: Page 7-15

Ham Academy Lesson: 5B

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E4B04

A. 14.652 Hz

ARRL Extra Manual: Page 7-15

Ham Academy Lesson: 5B

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E8D01

A. Peak-to-peak voltage

ARRL Extra Manual: Page 7-16

Ham Academy Lesson: 5B

Extra Class Questions valid thru 06-30-2016
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E4A11

B. Oscilloscope

ARRL Extra Manual: Page 7-16

Ham Academy Lesson: 5B

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E4B07

A. Keep the signal ground connection of the probe as short as possible

ARRL Extra Manual: Page 7-17

Ham Academy Lesson: 5B

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E4A01

C. A spectrum analyzer displays signals in the frequency domain; an oscilloscope displays signals in the time domain

ARRL Extra Manual: Page 7-17

Ham Academy Lesson: 5B

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E4A02

D. Frequency

ARRL Extra Manual: Page 7-18

Ham Academy Lesson: 5B

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E4B13

A. A square wave is displayed and the probe is adjusted until the horizontal portions of the displayed wave are as nearly flat as possible

ARRL Extra Manual: Page 7-17

Ham Academy Lesson: 5B

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E4A04

A. A spectrum analyzer

ARRL Extra Manual: Page 7-18

Ham Academy Lesson: 5B

Extra Class Questions valid thru 06-30-2016
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E4A03

A. Amplitude

ARRL Extra Manual: Page 7-18

Ham Academy Lesson: 5B

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E4A06

D. All of these choices are correct

ARRL Extra Manual: Page 7-19

Ham Academy Lesson: 5B

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E4A05

B. A spectrum analyzer

ARRL Extra Manual: Page 7-19

Ham Academy Lesson: 5B

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E4B10

B. Modulate the transmitter with two non-harmonically related audio frequencies and observe the RF output with a spectrum analyzer

ARRL Extra Manual: Page 7-19

Ham Academy Lesson: 5B

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E4A12

B. Attenuate the transmitter output going to the spectrum analyzer

ARRL Extra Manual: Page 7-19

Ham Academy Lesson: 5B

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E8B05

D. 1.67

ARRL Extra Manual: Page 7-23

Ham Academy Lesson: 5B

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E4A10

D. Measure base-to-emitter voltage with a voltmeter; it should be approximately 0.6 to 0.7 volts

ARRL Extra Manual: Page 7-20

Ham Academy Lesson: 5B

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E8B09

B. The ratio of the maximum carrier frequency deviation to the highest audio modulating frequency

ARRL Extra Manual: Page 7-23

Ham Academy Lesson: 5B

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E8B06

A. 2.14

ARRL Extra Manual: Page 7-23

Ham Academy Lesson: 5B

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E8B02

D. It does not depend on the RF carrier frequency

ARRL Extra Manual: Page 7-24

Ham Academy Lesson: 5B

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E8B01

D. Modulation index

ARRL Extra Manual: Page 7-24

Ham Academy Lesson: 5B

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E8B04

B. 3

ARRL Extra Manual: Page 7-24

Ham Academy Lesson: 5B

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E8B03

A. 3

ARRL Extra Manual: Page 7-24

Ham Academy Lesson: 5B

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E8A11

D. Digital data transmission

ARRL Extra Manual: Page 7-25

Ham Academy Lesson: 5C

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E1B12

B. 1.0

ARRL Extra Manual: Page 7-25

Ham Academy Lesson: 5C

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E8B07

A. The signal duty cycle is less than 100%

ARRL Extra Manual: Page 7-26

Ham Academy Lesson: 5C

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E8B08

D. The time at which each pulse occurs

ARRL Extra Manual: Page 7-25

Ham Academy Lesson: 5C

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E8B11

B. Two or more information streams are merged into a "baseband", which then modulates the transmitter

ARRL Extra Manual: Page 7-26

Ham Academy Lesson: 5C

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E8B10

C. Frequency division multiplexing

ARRL Extra Manual: Page 7-26

Ham Academy Lesson: 5C

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E4D06

D. Intermodulation interference

ARRL Extra Manual: Page 7-27

Ham Academy Lesson: 5C

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E8B12

B. Two or more signals are arranged to share discrete time slots of a data transmission

ARRL Extra Manual: Page 7-26

Ham Academy Lesson: 5C

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E4D08

C. Nonlinear circuits or devices

ARRL Extra Manual: Page 7-27

Ham Academy Lesson: 5C

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E4D07

D. The off-frequency unwanted signal is heard in addition to the desired signal

ARRL Extra Manual: Page 7-27

Ham Academy Lesson: 5C

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E4D04

B. A properly terminated circulator at the output of the transmitter

ARRL Extra Manual: Page 7-28

Ham Academy Lesson: 5C

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E4D03

B. When the repeaters are in close proximity and the signals mix in the final amplifier of one or both transmitters

ARRL Extra Manual: Page 7-28

Ham Academy Lesson: 5C

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E4E06

B. Thunderstorms

ARRL Extra Manual: Page 7-29

Ham Academy Lesson: 5C

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E4E11

B. Nearby corroded metal joints are mixing and re-radiating the broadcast signals

ARRL Extra Manual: Page 7-28

Ham Academy Lesson: 5C

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E4E07

C. By turning off the AC power line main circuit breaker and listening on a battery operated radio

ARRL Extra Manual: Page 7-30

Ham Academy Lesson: 5C

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E4E05

B. By installing a brute-force AC-line filter in series with the motor leads

ARRL Extra Manual: Page 7-30

Ham Academy Lesson: 5C

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E4E08

A. A common-mode signal at the frequency of the radio transmitter

ARRL Extra Manual: Page 7-31

Ham Academy Lesson: 5C

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E4E13

D. All of these choices are correct

ARRL Extra Manual: Page 7-30

Ham Academy Lesson: 5C

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E4E14

C. The appearance of unstable modulated or unmodulated signals at specific frequencies

ARRL Extra Manual: Page 7-31

Ham Academy Lesson: 5C

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E4E10

D. All of these choices are correct

ARRL Extra Manual: Page 7-31

Ham Academy Lesson: 5C

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E4E03

B. Signals which appear across a wide bandwidth

ARRL Extra Manual: Page 7-33

Ham Academy Lesson: 5C

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E4E01

A. Ignition noise

ARRL Extra Manual: Page 7-33

Ham Academy Lesson: 5C

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E4E09

C. Nearby signals may appear to be excessively wide even if they meet emission standards

ARRL Extra Manual: Page 7-34

Ham Academy Lesson: 5C

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E4E04

D. By connecting the radio's power leads directly to the battery and by installing coaxial capacitors in line with the alternator leads

ARRL Extra Manual: Page 7-33

Ham Academy Lesson: 5C

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E4E02

D. All of these choices are correct

ARRL Extra Manual: Page 7-34

Ham Academy Lesson: 5C

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E4E12

A. The DSP filter can remove the desired signal at the same time as it removes interfering signals

ARRL Extra Manual: Page 7-34

Ham Academy Lesson: 5C

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E8A15

B. A series of pulses with varying patterns

ARRL Extra Manual: Page 8-2

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2D02

A. The number of data symbols transmitted per second

ARRL Extra Manual: Page 8-2

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E8C01

D. Morse code

ARRL Extra Manual: Page 8-4

Ham Academy Lesson: 6A

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E2E09

D. PSK31

ARRL Extra Manual: Page 8-4

Ham Academy Lesson: 6A

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E8C03

C. It is possible to transmit both upper and lower case text

ARRL Extra Manual: Page 8-4

Ham Academy Lesson: 6A

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E8C02

B. Baudot uses five data bits per character, ASCII uses seven or eight; Baudot uses two characters as shift codes, ASCII has no shift code

ARRL Extra Manual: Page 8-4

Ham Academy Lesson: 6A

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E8A12

D. All of these choices are correct

ARRL Extra Manual: Page 8-5

Ham Academy Lesson: 6A

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E8C12

D. Some types of errors can be detected

ARRL Extra Manual: Page 8-4

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2E01

B. FSK

ARRL Extra Manual: Page 8-6

Ham Academy Lesson: 6A

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E8A13

C. Digital signals can be regenerated multiple times without error

ARRL Extra Manual: Page 8-5

Ham Academy Lesson: 6A

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E8C05

C. Approximately 52 Hz

ARRL Extra Manual: Page 8-6

Ham Academy Lesson: 6A

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E2E11

A. Direct FSK applies the data signal to the transmitter VFO

ARRL Extra Manual: Page 8-6

Ham Academy Lesson: 6A

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E8C07

A. 15.36 kHz

ARRL Extra Manual: Page 8-6

Ham Academy Lesson: 6A

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E8C06

C. 0.5 kHz

ARRL Extra Manual: Page 8-6

Ham Academy Lesson: 6A

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E2E04

A. Selective fading has occurred

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2D09

D. 300-baud packet

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

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E2E08

B. PACTOR

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2E06

C. 300 baud

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

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E8C04

C. Use of sinusoidal data pulses

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

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E2E10

C. PSK31

ARRL Extra Manual: Page 8-7

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2D03

D. JT65

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6A

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E2D01

B. FSK441

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6A

Extra Class Questions valid thru 06-30-2016
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E2E07

B. 316 Hz

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6A

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E2D12

A. It can decode signals many dB below the noise floor using FEC

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6A

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E4A09

A. Transmit into a dummy load, receive the signal on a second receiver, and feed the audio into the sound card of a computer running an appropriate PSK program

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6B

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E2E12

A. Winlink

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6B

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E2C08

A. Signals not using the spectrum-spreading algorithm are suppressed in the receiver

ARRL Extra Manual: Page 8-9

Ham Academy Lesson: 6B

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E8C13

B. The ability to decode signals which have a very low signal to noise ratio

ARRL Extra Manual: Page 8-8

Ham Academy Lesson: 6B

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E8C09

A. Spread-spectrum

ARRL Extra Manual: Page 8-9

Ham Academy Lesson: 6B

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E8C08

D. Spread-spectrum communication

ARRL Extra Manual: Page 8-9

Ham Academy Lesson: 6B

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E8C10

A. Frequency hopping

ARRL Extra Manual: Page 8-10

Ham Academy Lesson: 6B

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E2C09

D. The frequency of the transmitted signal is changed very rapidly according to a particular sequence also used by the receiving station

ARRL Extra Manual: Page 8-10

Ham Academy Lesson: 6B

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E2E02

A. Forward Error Correction

ARRL Extra Manual: Page 8-11

Ham Academy Lesson: 6B

Extra Class Questions valid thru 06-30-2016
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E8C11

B. Direct sequence

ARRL Extra Manual: Page 8-10

Ham Academy Lesson: 6B

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E2E05

D. If errors are detected, a retransmission is requested

ARRL Extra Manual: Page 8-11

Ham Academy Lesson: 6B

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E2E03

C. By transmitting extra data that may be used to detect and correct transmission errors

ARRL Extra Manual: Page 8-11

Ham Academy Lesson: 6B

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E2B02

C. 525

ARRL Extra Manual: Page 8-13

Ham Academy Lesson: 6B

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E2B01

A. 30

ARRL Extra Manual: Page 8-13

Ham Academy Lesson: 6B

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E2B04

B. Turning off the scanning beam while it is traveling from right to left or from bottom to top

ARRL Extra Manual: Page 8-13

Ham Academy Lesson: 6B

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E2B03

D. By scanning odd numbered lines in one field and even numbered ones in the next

ARRL Extra Manual: Page 8-13

Ham Academy Lesson: 6B

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E2B07

B. Chroma

ARRL Extra Manual: Page 8-15

Ham Academy Lesson: 6B

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E2B16

D. NTSC

ARRL Extra Manual: Page 8-13

Ham Academy Lesson: 6B

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E2B06

A. Amplitude modulation in which one complete sideband and a portion of the other are transmitted

ARRL Extra Manual: Page 8-16

Ham Academy Lesson: 6B

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E2B05

C. Vestigial sideband reduces bandwidth while allowing for simple video detector circuitry

ARRL Extra Manual: Page 8-16

Ham Academy Lesson: 6B

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E2B18

D. 1255 MHz

ARRL Extra Manual: Page 8-16

Ham Academy Lesson: 6B

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E2B08

D. All of these choices are correct

ARRL Extra Manual: Page 8-16

Ham Academy Lesson: 6B

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E2B11

B. To identify the SSTV mode being used

ARRL Extra Manual: Page 8-18

Ham Academy Lesson: 6B

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E2B12

D. Varying tone frequencies representing the video are transmitted using single sideband

ARRL Extra Manual: Page 8-17

Ham Academy Lesson: 6B

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E2B14

A. Tone frequency

ARRL Extra Manual: Page 8-18

Ham Academy Lesson: 6B

Extra Class Questions valid thru 06-30-2016
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E2B13

C. 128 or 256

ARRL Extra Manual: Page 8-18

Ham Academy Lesson: 6B

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E2B17

B. 3 kHz

ARRL Extra Manual: Page 8-18

Ham Academy Lesson: 6B

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E2B15

A. Specific tone frequencies

ARRL Extra Manual: Page 8-18

Ham Academy Lesson: 6B

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E2B10

A. 3 KHz

ARRL Extra Manual: Page 8-19

Ham Academy Lesson: 6B

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E2B09

D. No other hardware is needed

ARRL Extra Manual: Page 8-19

Ham Academy Lesson: 6B

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E4C07

B. The minimum discernible signal

ARRL Extra Manual: Page 8-19

Ham Academy Lesson: 6B

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E2B19

C. They are restricted to phone band segments and their bandwidth can be no greater than that of a voice signal of the same modulation type

ARRL Extra Manual: Page 8-19

Ham Academy Lesson: 6B

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E4C05

B. The theoretical noise at the input of a perfect receiver at room temperature

ARRL Extra Manual: Page 8-20

Ham Academy Lesson: 6C

Extra Class Questions valid thru 06-30-2016
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E4C04

D. The ratio in dB of the noise generated by the receiver compared to the theoretical minimum noise

ARRL Extra Manual: Page 8-20

Ham Academy Lesson: 6B

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E4C15

D. Atmospheric noise

ARRL Extra Manual: Page 8-20

Ham Academy Lesson: 6C

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E4C06

D. -148 dBm

ARRL Extra Manual: Page 8-20

Ham Academy Lesson: 6C

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E4C02

A. A front-end filter or pre-selector

ARRL Extra Manual: Page 8-21

Ham Academy Lesson: 6C

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E6E05

A. 2 dB

ARRL Extra Manual: Page 8-20

Ham Academy Lesson: 6C

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E4C09

C. Easier for front-end circuitry to eliminate image responses

ARRL Extra Manual: Page 8-21

Ham Academy Lesson: 6C

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E4C08

B. It would improve weak signal sensitivity

ARRL Extra Manual: Page 8-21

Ham Academy Lesson: 6C

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E4D09

C. To increase rejection of unwanted signals

ARRL Extra Manual: Page 8-21

Ham Academy Lesson: 6C

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E4C14

D. 15.210 MHz

ARRL Extra Manual: Page 8-21

Ham Academy Lesson: 6C

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E4C11

B. 2.4 kHz

ARRL Extra Manual: Page 8-22

Ham Academy Lesson: 6C

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E4C10

B. 300 Hz

ARRL Extra Manual: Page 8-22

Ham Academy Lesson: 6C

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E4C13

C. It improves dynamic range by attenuating strong signals near the receive frequency

ARRL Extra Manual: Page 8-22

Ham Academy Lesson: 6C

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E4C12

D. Undesired signals may be heard

ARRL Extra Manual: Page 8-22

Ham Academy Lesson: 6C

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E4D12

A. Desensitization

ARRL Extra Manual: Page 8-23

Ham Academy Lesson: 6C

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E4D01

A. The difference in dB between the noise floor and the level of an incoming signal which will cause 1 dB of gain compression

ARRL Extra Manual: Page 8-23

Ham Academy Lesson: 6C

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E4D14

A. Decrease the RF bandwidth of the receiver

ARRL Extra Manual: Page 8-23

Ham Academy Lesson: 6C

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E4D13

B. Strong adjacent-channel signals

ARRL Extra Manual: Page 8-23

Ham Academy Lesson: 6C

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E4D11

A. The third-order product of two signals which are in the band of interest is also likely to be within the band

ARRL Extra Manual: Page 8-24

Ham Academy Lesson: 6C

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E4D05

A. 146.34 MHz and 146.61 MHz

ARRL Extra Manual: Page 8-24

Ham Academy Lesson: 6C

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E4C01

D. It can cause strong signals on nearby frequencies to interfere with reception of weak signals

ARRL Extra Manual: Page 8-26

Ham Academy Lesson: 6C

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E4D10

C. A pair of 40 dBm signals will theoretically generate a third-order intermodulation product with the same level as the input signals

ARRL Extra Manual: Page 8-25

Ham Academy Lesson: 6C

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E4C03

C. Capture effect

ARRL Extra Manual: Page 8-27

Ham Academy Lesson: 6C

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E4D02

A. Cross-modulation of the desired signal and desensitization from strong adjacent signals

ARRL Extra Manual: Page 8-26

Ham Academy Lesson: 6C

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E9B12

D. The region where the shape of the antenna pattern is independent of distance

ARRL Extra Manual: Page 9-2

Ham Academy Lesson: 7A

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E9A01

C. A theoretical antenna used as a reference for antenna gain

ARRL Extra Manual: Page 9-2

Ham Academy Lesson: 7A

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E9A03

D. Isotropic antenna

ARRL Extra Manual: Page 9-3

Ham Academy Lesson: 7A

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E9A02

B. 2.15 dB

ARRL Extra Manual: Page 9-3

Ham Academy Lesson: 7A

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E9B07

C. They are the same

ARRL Extra Manual: Page 9-3

Ham Academy Lesson: 7A

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E9A08

A. The ratio relating the radiated signal strength of an antenna in the direction of maximum radiation to that of a reference antenna

ARRL Extra Manual: Page 9-3

Ham Academy Lesson: 7A

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E9A14

B. 9.85 dB

ARRL Extra Manual: Page 9-4

Ham Academy Lesson: 7A

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E9A13

A. 3.85 dB

ARRL Extra Manual: Page 9-4

Ham Academy Lesson: 7A

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E9D03

D. It decreases

ARRL Extra Manual: Page 9-4

Ham Academy Lesson: 7A

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E9B08

A. Note the two points where the signal strength of the antenna is 3 dB less than maximum and compute the angular difference

ARRL Extra Manual: Page 9-4

Ham Academy Lesson: 7A

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E9A15

C. The value of a resistance that would dissipate the same amount of power as that radiated from an antenna

ARRL Extra Manual: Page 9-5

Ham Academy Lesson: 7A

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E9A06

D. Radiation resistance plus ohmic resistance

ARRL Extra Manual: Page 9-5

Ham Academy Lesson: 7A

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E9B02

B. 18 dB

ARRL Extra Manual: Page 9-5

Ham Academy Lesson: 7A

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E9B01

B. 50 degrees

ARRL Extra Manual: Page 9-5

Ham Academy Lesson: 7A

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E9A05

B. Antenna height, conductor length/diameter ratio and location of nearby conductive objects

ARRL Extra Manual: Page 9-6

Ham Academy Lesson: 7A

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E9B03

B. 14 dB

ARRL Extra Manual: Page 9-5

Ham Academy Lesson: 7A

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E9A11

A. Install a good radial system

ARRL Extra Manual: Page 9-7

Ham Academy Lesson: 7A

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E9A10

B. (radiation resistance / total resistance) x 100%

ARRL Extra Manual: Page 9-6

Ham Academy Lesson: 7A

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E9C07

A. Elevation

ARRL Extra Manual: Page 9-8

Ham Academy Lesson: 7A

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E9A09

B. The frequency range over which an antenna satisfies a performance requirement

ARRL Extra Manual: Page 9-8

Ham Academy Lesson: 7A

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E9C09

B. 28 dB

ARRL Extra Manual: Page 9-8

Ham Academy Lesson: 7A

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E9C08

C. 7.5 degrees

ARRL Extra Manual: Page 9-8

Ham Academy Lesson: 7A

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E9A12

C. Soil conductivity

ARRL Extra Manual: Page 9-9

Ham Academy Lesson: 7B

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E9C10

A. 4

ARRL Extra Manual: Page 9-8

Ham Academy Lesson: 7A

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E9C13

C. It reduces low-angle radiation

ARRL Extra Manual: Page 9-9

Ham Academy Lesson: 7B

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E9C11

D. The low-angle radiation increases

ARRL Extra Manual: Page 9-9

Ham Academy Lesson: 7B

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E3C10

B. The main lobe takeoff angle decreases in the downhill direction

ARRL Extra Manual: Page 9-10

Ham Academy Lesson: 7B

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E3C07

B. The main lobe takeoff angle decreases with increasing height

ARRL Extra Manual: Page 9-10

Ham Academy Lesson: 7B

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E9D08

B. It is decreased

ARRL Extra Manual: Page 9-11

Ham Academy Lesson: 7B

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E9D14

B. A wide flat copper strap

ARRL Extra Manual: Page 9-10

Ham Academy Lesson: 7B

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E9D13

B. The radiation resistance decreases and the capacitive reactance increases

ARRL Extra Manual: Page 9-11

Ham Academy Lesson: 7B

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E9D11

D. To cancel capacitive reactance

ARRL Extra Manual: Page 9-11

Ham Academy Lesson: 7B

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E9D05

A. Near the center of the vertical radiator

ARRL Extra Manual: Page 9-12

Ham Academy Lesson: 7B

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E9D15

C. An electrically-short connection to 3 or 4 interconnected ground rods driven into the Earth

ARRL Extra Manual: Page 9-11

Ham Academy Lesson: 7B

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E9D09

D. Improved radiation efficiency

ARRL Extra Manual: Page 9-13

Ham Academy Lesson: 7B

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E9D06

C. To minimize losses

ARRL Extra Manual: Page 9-12

Ham Academy Lesson: 7B

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E9A07

C. A dipole constructed from one wavelength of wire forming a very thin loop

ARRL Extra Manual: Page 9-14

Ham Academy Lesson: 7B

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E9D12

D. It may be used for multiband operation

ARRL Extra Manual: Page 9-13

Ham Academy Lesson: 7B

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E9D10

A. 300 ohms

ARRL Extra Manual: Page 9-15

Ham Academy Lesson: 7B

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E9D07

A. It might radiate harmonics

ARRL Extra Manual: Page 9-14

Ham Academy Lesson: 7B

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E9C06

B. It changes the radiation pattern from bidirectional to unidirectional

ARRL Extra Manual: Page 9-16

Ham Academy Lesson: 7B

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E9C04

B. Bidirectional; four-sides, each side one or more wavelengths long; open at the end opposite the transmission line connection

ARRL Extra Manual: Page 9-16

Ham Academy Lesson: 7B

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E9C12

D. It should be one or more wavelengths long

ARRL Extra Manual: Page 9-17

Ham Academy Lesson: 7B

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E9C05

C. The antenna requires a large physical area and 4 separate supports

ARRL Extra Manual: Page 9-17

Ham Academy Lesson: 7B

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E9C01

D. A figure-8 oriented along the axis of the array

ARRL Extra Manual: Page 9-20

Ham Academy Lesson: 7B

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E9C03

C. A Figure-8 broadside to the axis of the array

ARRL Extra Manual: Page 9-18

Ham Academy Lesson: 7B

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E9E12

A. It ensures that each driven element operates in concert with the others to create the desired antenna pattern

ARRL Extra Manual: Page 9-20

Ham Academy Lesson: 7B

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E9C02

A. A cardioid

ARRL Extra Manual: Page 9-20

Ham Academy Lesson: 7B

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E9H04

C. Effective radiated power

ARRL Extra Manual: Page 9-20

Ham Academy Lesson: 7C

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E9E13

C. It divides power equally among multiple loads while preventing changes in one load from disturbing power flow to the others

ARRL Extra Manual: Page 9-20

Ham Academy Lesson: 7B

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E9H02

A. 317 watts

ARRL Extra Manual: Page 9-21

Ham Academy Lesson: 7C

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E9H01

D. 286 watts

ARRL Extra Manual: Page 9-21

Ham Academy Lesson: 7C

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E9D01

C. Gain increases by 6 dB

ARRL Extra Manual: Page 9-23

Ham Academy Lesson: 7C

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E9H03

B. 252 watts

ARRL Extra Manual: Page 9-22

Ham Academy Lesson: 7C

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E9D04

A. In order to track the satellite as it orbits the Earth

ARRL Extra Manual: Page 9-23

Ham Academy Lesson: 7C

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E9D02

C. Arrange two Yagis perpendicular to each other with the driven elements at the same point on the boom and fed 90 degrees out of phase

ARRL Extra Manual: Page 9-23

Ham Academy Lesson: 7C

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E9H10

D. By increasing either the number of wire turns in the loop or the area of the loop structure or both

ARRL Extra Manual: Page 9-24

Ham Academy Lesson: 7C

Extra Class Questions valid thru 06-30-2016
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E9H09

C. One or more turns of wire wound in the shape of a large open coil

ARRL Extra Manual: Page 9-23

Ham Academy Lesson: 7C

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E9H06

C. Antenna headings from several different receiving locations are used to locate the signal source

ARRL Extra Manual: Page 9-25

Ham Academy Lesson: 7C

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E9H05

A. It has a bidirectional pattern

ARRL Extra Manual: Page 9-25

Ham Academy Lesson: 7C

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E9H12

B. It is electro-statically balanced against ground, giving better nulls

ARRL Extra Manual: Page 9-25

Ham Academy Lesson: 7C

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E9H07

D. It prevents receiver overload which could make it difficult to determine peaks or nulls

ARRL Extra Manual: Page 9-25

Ham Academy Lesson: 7C

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E9H11

B. A very sharp single null

ARRL Extra Manual: Page 9-26

Ham Academy Lesson: 7C

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E9H08

A. It modifies the pattern of a DF antenna array to provide a null in one direction

ARRL Extra Manual: Page 9-26

Ham Academy Lesson: 7C

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E9E01

B. The delta matching system

ARRL Extra Manual: Page 9-28

Ham Academy Lesson: 7C

Extra Class Questions valid thru 06-30-2016
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E9A04

A. To match impedances in order to minimize standing wave ratio on the transmission line

ARRL Extra Manual: Page 9-27

Ham Academy Lesson: 7C

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E9E04

B. To cancel the inductive reactance of the matching network

ARRL Extra Manual: Page 9-28

Ham Academy Lesson: 7C

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E9E02

A. The gamma match

ARRL Extra Manual: Page 9-28

Ham Academy Lesson: 7C

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E9E03

D. The stub match

ARRL Extra Manual: Page 9-29

Ham Academy Lesson: 7C

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E9E09

C. Gamma match

ARRL Extra Manual: Page 9-28

Ham Academy Lesson: 7C

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E9E06

C. L network

ARRL Extra Manual: Page 9-29

Ham Academy Lesson: 7C

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E9E05

A. The driven element reactance must be capacitive

ARRL Extra Manual: Page 9-29

Ham Academy Lesson: 7C

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E9F01

D. The velocity of the wave in the transmission line divided by the velocity of light in a vacuum

ARRL Extra Manual: Page 9-31

Ham Academy Lesson: 7C

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E9E11

B. Use the "universal stub" matching technique

ARRL Extra Manual: Page 9-29

Ham Academy Lesson: 7C

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E9F03

D. Electrical signals move more slowly in a coaxial cable than in air

ARRL Extra Manual: Page 9-31

Ham Academy Lesson: 7C

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E9F02

C. Dielectric materials used in the line

ARRL Extra Manual: Page 9-31

Ham Academy Lesson: 7C

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E9F08

A. Velocity factor

ARRL Extra Manual: Page 9-31

Ham Academy Lesson: 7C

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E9F04

B. 0.66

ARRL Extra Manual: Page 9-31

Ham Academy Lesson: 7C

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E9F06

C. 10 meters

ARRL Extra Manual: Page 9-32

Ham Academy Lesson: 7C

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E9F05

C. 3.5 meters

ARRL Extra Manual: Page 9-32

Ham Academy Lesson: 7C

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E9F09

B. 6.9 meters

ARRL Extra Manual: Page 9-32

Ham Academy Lesson: 7C

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E9F07

A. Lower loss

ARRL Extra Manual: Page 9-32

Ham Academy Lesson: 7C

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E9E07

B. Reflection coefficient

ARRL Extra Manual: Page 9-33

Ham Academy Lesson: 7C

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E9F16

D. All of these choices are correct

ARRL Extra Manual: Page 9-32

Ham Academy Lesson: 7C

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E4B06

D. 75 watts

ARRL Extra Manual: Page 9-34

Ham Academy Lesson: 7D

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E9E08

D. An SWR greater than 1:1

ARRL Extra Manual: Page 9-33

Ham Academy Lesson: 7C

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E9G01

A. Impedance along transmission lines

ARRL Extra Manual: Page 9-35

Ham Academy Lesson: 7D

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E4B09

D. There is more power going into the antenna

ARRL Extra Manual: Page 9-34

Ham Academy Lesson: 7D

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E9G05

A. Smith chart

ARRL Extra Manual: Page 9-35

Ham Academy Lesson: 7D

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E9G03

C. Impedance and SWR values in transmission lines

ARRL Extra Manual: Page 9-35

Ham Academy Lesson: 7D

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E9G02

B. Resistance circles and reactance arcs

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G07

D. The resistance axis

ARRL Extra Manual: Page 9-35

Ham Academy Lesson: 7D

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E9G06

B. Reactance axis

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G04

C. Resistance and reactance

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G09

A. Standing-wave ratio circles

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G08

C. Reassigning impedance values with regard to the prime center

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G11

B. In fractions of transmission line electrical wavelength

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9G10

D. Points with constant reactance

ARRL Extra Manual: Page 9-37

Ham Academy Lesson: 7D

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E9F11

C. A capacitive reactance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

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E9F10

C. An inductive reactance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

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E9F13

A. Very high impedance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

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E9F12

D. Very low impedance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

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E9F15

A. Very high impedance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

Extra Class Questions valid thru 06-30-2016
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E9F14

B. Very low impedance

ARRL Extra Manual: Page 9-39

Ham Academy Lesson: 7D

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E4A08

D. An antenna analyzer

ARRL Extra Manual: Page 9-40

Ham Academy Lesson: 7D

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E4A07

B. Antenna analyzers do not need an external RF source

ARRL Extra Manual: Page 9-40

Ham Academy Lesson: 7D

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E9E10

C. Insert a 1/4-wavelength piece of 75-ohm coaxial cable transmission line in series between the antenna terminals and the 50-ohm feed cable

ARRL Extra Manual: Page 9-40

Ham Academy Lesson: 7D

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E4B11

D. Connect the antenna feed line directly to the analyzer's connector

ARRL Extra Manual: Page 9-40

Ham Academy Lesson: 7D

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E9B10

A. A wire is modeled as a series of segments, each having a uniform value of current

ARRL Extra Manual: Page 9-41

Ham Academy Lesson: 7D

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E9B09

B. Method of Moments

ARRL Extra Manual: Page 9-41

Ham Academy Lesson: 7D

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E9B04

D. The gain may change depending on frequency

ARRL Extra Manual: Page 9-42

Ham Academy Lesson: 7D

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E9B13

B. Numerical Electromagnetics Code

ARRL Extra Manual: Page 9-41

Ham Academy Lesson: 7D

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E9B06

A. The gain increases

ARRL Extra Manual: Page 9-42

Ham Academy Lesson: 7D

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E9B05

B. The front-to-back ratio decreases

ARRL Extra Manual: Page 9-42

Ham Academy Lesson: 7D

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E9B14

D. All of these choices are correct

ARRL Extra Manual: Page 9-42

Ham Academy Lesson: 7D

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E9B11

C. The computed feed point impedance may be incorrect

ARRL Extra Manual: Page 9-42

Ham Academy Lesson: 7D

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E3C12

C. It decreases

ARRL Extra Manual: Page 10-2

Ham Academy Lesson: 8A

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E3C08

B. Pedersen ray

ARRL Extra Manual: Page 10-2

Ham Academy Lesson: 8A

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E3B04

A. Long-path

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

Extra Class Questions valid thru 06-30-2016
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E3C13

A. Vertical

ARRL Extra Manual: Page 10-2

Ham Academy Lesson: 8A

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E3B06

B. 20 meters

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3B05

C. 160 to 10 meters

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3B08

D. Gray-line

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3B07

D. Receipt of a signal by more than one path

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3B10

B. At twilight, D-layer absorption drops while E-layer and F-layer propagation remain strong

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3B09

A. At sunrise and sunset

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

Extra Class Questions valid thru 06-30-2016
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E3C05

B. Partial cancellation of some frequencies within the received pass band

ARRL Extra Manual: Page 10-5

Ham Academy Lesson: 8A

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E3B11

C. Long distance communications at twilight on frequencies less than 15 MHz

ARRL Extra Manual: Page 10-4

Ham Academy Lesson: 8A

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E3C14

D. Downward bending due to density variations in the atmosphere

ARRL Extra Manual: Page 10-7

Ham Academy Lesson: 8A

Extra Class Questions valid thru 06-30-2016
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E3C06

A. By approximately 15% of the distance

ARRL Extra Manual: Page 10-7

Ham Academy Lesson: 8A

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E3C09

C. Tropospheric ducting

ARRL Extra Manual: Page 10-8

Ham Academy Lesson: 8A

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E3B01

A. Propagation between two mid-latitude points at approximately the same distance north and south of the magnetic equator

ARRL Extra Manual: Page 10-8

Ham Academy Lesson: 8A

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E3B03

C. Afternoon or early evening

ARRL Extra Manual: Page 10-9

Ham Academy Lesson: 8A

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E3B02

C. 5000 miles

ARRL Extra Manual: Page 10-9

Ham Academy Lesson: 8A

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E3C03

D. In the E-region

ARRL Extra Manual: Page 10-9

Ham Academy Lesson: 8B

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E3C02

C. The interaction of charged particles from the Sun with the Earth's magnetic field and the ionosphere

ARRL Extra Manual: Page 10-9

Ham Academy Lesson: 8B

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E3C04

A. CW

ARRL Extra Manual: Page 10-10

Ham Academy Lesson: 8B

Extra Class Questions valid thru 06-30-2016
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E3C01

D. All of these choices are correct

ARRL Extra Manual: Page 10-10

Ham Academy Lesson: 8B

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E3A08

A. The E layer

ARRL Extra Manual: Page 10-11

Ham Academy Lesson: 8B

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E3C11

B. North

ARRL Extra Manual: Page 10-10

Ham Academy Lesson: 8B

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E3A10

D. All of these choices are correct

ARRL Extra Manual: Page 10-12

Ham Academy Lesson: 8B

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E3A09

C. 28 - 148 MHz

ARRL Extra Manual: Page 10-11

Ham Academy Lesson: 8B

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E3A02

B. A fluttery irregular fading

ARRL Extra Manual: Page 10-13

Ham Academy Lesson: 8B

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E3A01

D. 12,000 miles, as long as both can "see" the Moon

ARRL Extra Manual: Page 10-13

Ham Academy Lesson: 8B

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E3A04

D. Equipment with very low noise figures

ARRL Extra Manual: Page 10-13

Ham Academy Lesson: 8B

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E3A03

A. When the Moon is at perigee

ARRL Extra Manual: Page 10-13

Ham Academy Lesson: 8B

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E3A06

B. 144.000 - 144.100 MHz

ARRL Extra Manual: Page 10-14

Ham Academy Lesson: 8B

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E3A05

A. Time synchronous transmissions with each station alternating

ARRL Extra Manual: Page 10-14

Ham Academy Lesson: 8B

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E0A10

A. Polychlorinated biphenyls

ARRL Extra Manual: Page 11-1

Ham Academy Lesson: 8C

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E3A07

D. 432.000 - 432.100 MHz

ARRL Extra Manual: Page 10-14

Ham Academy Lesson: 8B

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E0A01

C. Radioactive materials emit ionizing radiation, while RF signals have less energy and can only cause heating

ARRL Extra Manual: Page 11-3

Ham Academy Lesson: 8C

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E0A09

C. Beryllium Oxide

ARRL Extra Manual: Page 11-2

Ham Academy Lesson: 8C

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E0A11

C. Localized heating of the body from RF exposure in excess of the MPE limits

ARRL Extra Manual: Page 11-3

Ham Academy Lesson: 8C

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E0A07

B. Only with a carbon monoxide detector

ARRL Extra Manual: Page 11-3

Ham Academy Lesson: 8C

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E0A08

C. The rate at which RF energy is absorbed by the body

ARRL Extra Manual: Page 11-4

Ham Academy Lesson: 8C

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E0A06

D. All of these choices are correct

ARRL Extra Manual: Page 11-4

Ham Academy Lesson: 8C

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E0A03

C. Use an antenna modeling program to calculate field strength at accessible locations

ARRL Extra Manual: Page 11-7

Ham Academy Lesson: 8C

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E0A02

B. Make sure signals from your station are less than the uncontrolled MPE limits

ARRL Extra Manual: Page 11-5

Ham Academy Lesson: 8C

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E0A05

B. The high gain antennas commonly used can result in high exposure levels

ARRL Extra Manual: Page 11-8

Ham Academy Lesson: 8C

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E0A04

C. Each transmitter that produces 5% or more of its MPE exposure limit at accessible locations

ARRL Extra Manual: Page 11-7

Ham Academy Lesson: 8C

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Figure E5-2

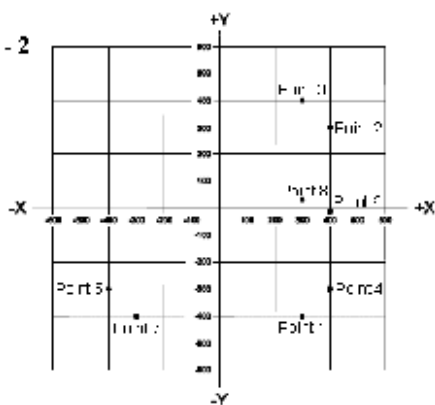


Figure E6-1

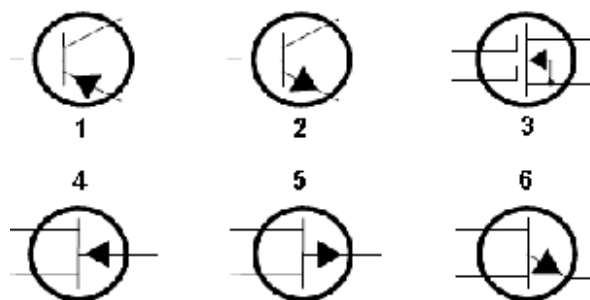


Figure E6-2

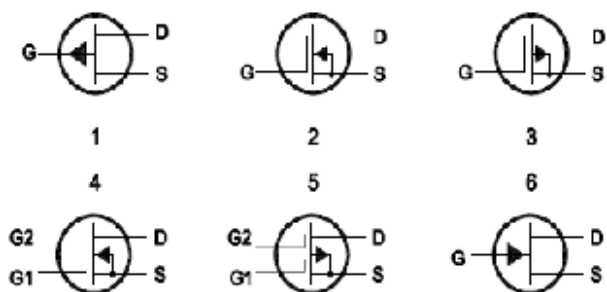


Figure E6-3

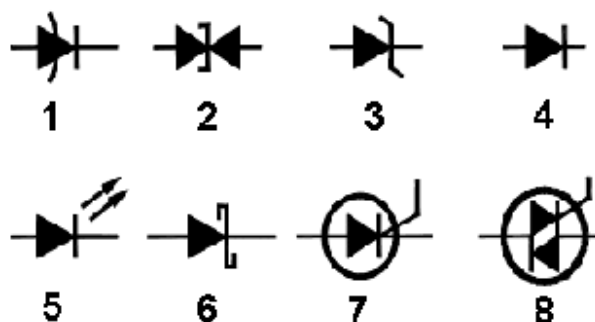


Figure E6-5

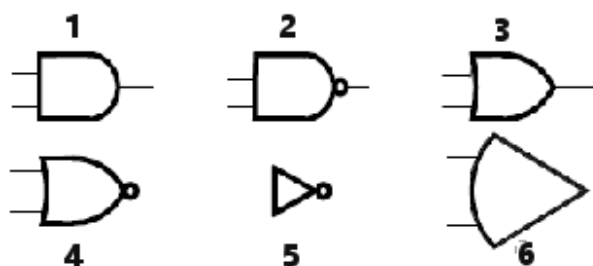


Figure E7-1

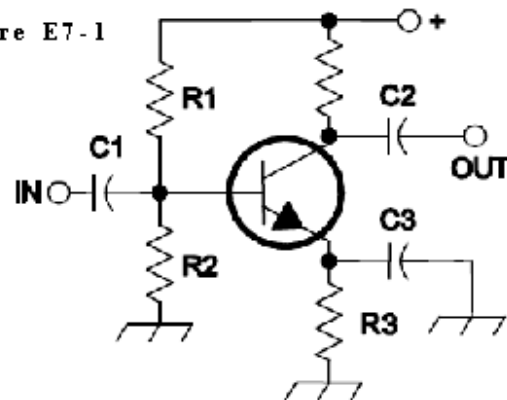


Figure E7-2

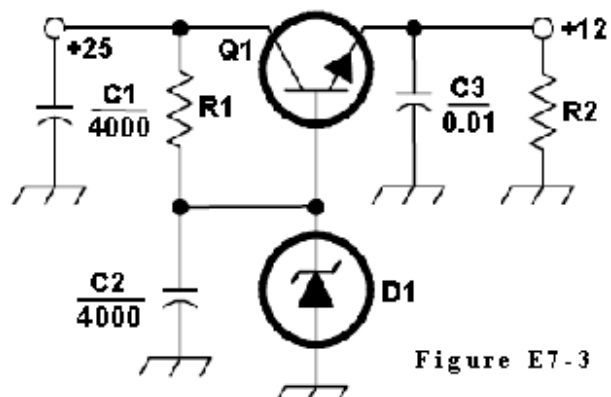
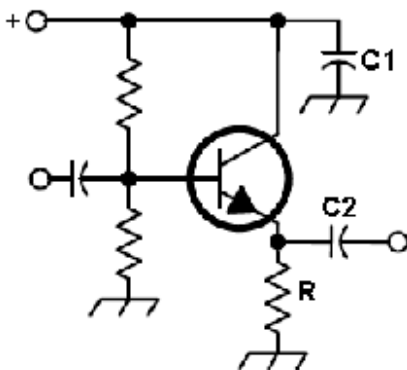


Figure E7-3

Figure E7-4

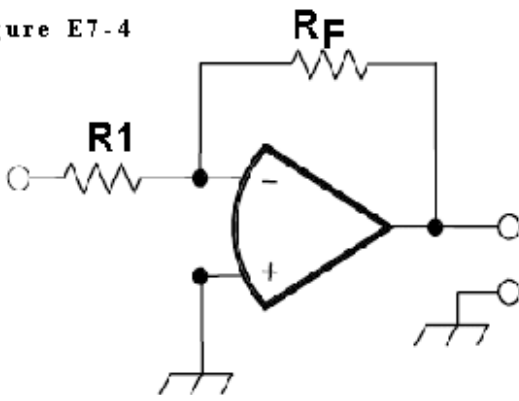


Figure E9-1

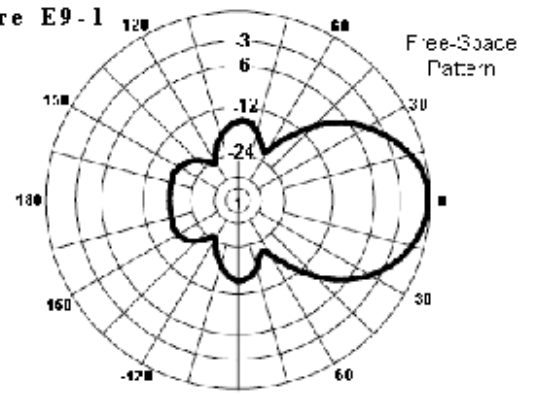


Figure E9-2

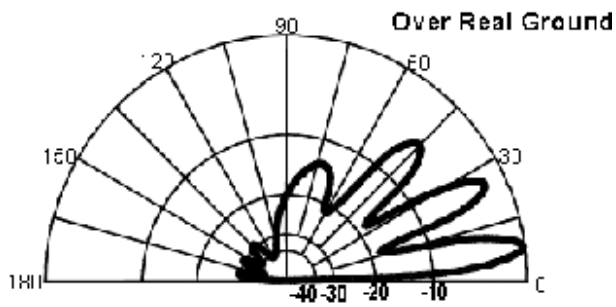


Figure E9-3

