Section 1 – Licensing conditions and station identification

184 1 Nature of amateur radio, types of licence and call signs

188 1 Operation and supervision

188 3 Operation and supervision

191 2 Messages

192 2 Messages

193 3 Apparatus, inspection and closure of

199 2 Apparatus, inspection and closure of

202 3 Apparatus, inspection and closure of

205 3 Unattended and remote control operation

208 4 Unattended and remote control operation

207 4 Unattended and remote control operation

210 5 GICF and international

213 6 Licence schedule

216 6 Licence schedule

221 7 Fundamental theory

Section 1 – Licensing conditions and station identification

You are visiting a friend who is a Full licence holder and using his transmitter at 200 watts. Your friend leaves the room. You may continue operating
A. at 200 Watts because your friend is still on the premises.
B. only at 200 Watts because your friend is operating you a basis of
C. * but must use your two call signs and licence conditions.
D. at the same power but must use your own call signs.

Section 1 – Licensing conditions and station identification

Which of the following is a User Service?
D. only transmit if asked by a User Service
C. only use bands with Primary status
B. use any radio frequency requested
A. * use any radio frequency requested

Section 1 – Licensing conditions and station identification

You are providing an on-air talk in a guide club members to a camp site. As other members drive into range and wish to speak, they MUST
D. * exchange call signs with any member of the group.
C. * exchange call signs with any member of the group.
B. ask their turn to call in to join the group
A. exchange call signs with you as the leader of the group.

Section 1 – Licensing conditions and station identification

An Intermediate licence may set up a remotely operated transmitter provided that
B. * at least an Intermediate licence.
A. a Foundation licence.

Section 1 – Licensing conditions and station identification

An Intermediate licence may set up a remotely operated transmitter provided that
B. * a person authorised by Ofcom.
A. all of the above.

Section 1 – Licensing conditions and station identification

Which amateur band is allocated to the Amateur Service on a Primary basis but not at all for satellite use?
C 10.100 - 10.150MHz
B 7.100 - 7.200MHz
A 1.850 -2.000MHz

Section 1 – Licensing conditions and station identification

Which amateur band is allocated on a Primary basis but where amateurs must accept interference from ISM users?
B 5755 - 5765MHz
A 5830 - 5850MHz

Section 1 – Licensing conditions and station identification

Which of the following is NOT a User Service?
B. * but must use your own callsigns and licence conditions.
A. only transmit if asked by a User Service

Section 1 – Licensing conditions and station identification

Which amateur band is allocated on a Primary basis but not at all for satellite use?
B 5830 - 5850MHz
A 5755 - 5765MHz

Section 1 – Licensing conditions and station identification

You are providing an on-air talk in a guide club members to a camp site. As other members drive into range and wish to speak, they MUST
D. * exchange call signs with any member of the group.
C. * exchange call signs with any member of the group.
B. ask their turn to call in to join the group
A. exchange call signs with you as the leader of the group.

Section 1 – Licensing conditions and station identification

As an intermediate licence holder you are directly supervising another UK licenced amateur. He/she must
B.* the amateur’s details are not updated at least once every five years.
A. no transmissions have been made in a two year period.

Section 1 – Licensing conditions and station identification

Revocation of an amateur licence is likely to occur if
B.* but must use your two call signs and licence conditions.
A. * the amateur’s details are not updated at least once every five years.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D. check to see that the country you are visiting is covered by the C.E.P.T. agreement.
C. check that your transmitter can operate on the frequencies permitted in the country you are visiting.
B. notify Ofcom of the counties that you will be visiting.
A. * seek permission of the licencing authority in the countries you are visiting before using your transmitter.

Section 1 – Licensing conditions and station identification

You may be required to reduce power by
D. * only 200 Watts because your friend is still on the premises.
C. * only 200 Watts because your friend is still on the premises.
B. at 200 Watts because your friend is still on the premises.
A. at 200 Watts because your friend is still on the premises.

Section 1 – Licensing conditions and station identification

You are visiting your friend who is a Full licence holder and using his transmitter at 200 watts. Your friend leaves the room. You may continue operating
A. at 200 Watts because your friend is still on the premises.
B. only at 200 Watts because your friend is operating you a basis of
C. * but must use your two call signs and licence conditions.
D. at the same power but must use your own call signs.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D. * the remote control is transmitted on amateur band at no more than 500 mW p.e.p. e.r.p.
C. the remote control is transmitted on amateur band at less than 10W p.e.p. e.r.p.
B. the remote control is connected using a secure internet connection.
A. the remote control is connected using secure encryption.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

You are providing an on-air talk in a guide club members to a camp site. As other members drive into range and wish to speak, they MUST
D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* the Office of Communications.
C. ordered to do so by the RSGB.
B. ordered to do so by the local police.
A.* the Office of Communications.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* The Office of Communications.
C. The Fire Brigade.
B. The Royal Voluntary Service.
A. The Salvation Army.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D. give both call signs as identification.
C. give both call signs as identification.
B. give both call signs as identification.
A. * give both call signs as identification.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* by the local police.
C. ordered to do so by the local police.
B. requested to do so by the local police.
A.* by the local police.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* The Office of Communications.
C. The Fire Brigade.
B. The Royal Voluntary Service.
A. The Salvation Army.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D. on your own premises.
C. in your immediate vicinity.
B. in your immediate vicinity.
A. on your own premises.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D. check to see that the country you are visiting is covered by the C.E.P.T. agreement.
C. check that your transmitter can operate on the frequencies permitted in the country you are visiting.
B. notify Ofcom of the counties that you will be visiting.
A. * seek permission of the licencing authority in the countries you are visiting before using your transmitter.

Section 1 – Licensing conditions and station identification

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D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

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D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

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D.* the local police.
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D.* the local police.
C. ordered to do so by the RSGB.
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A.* the local police.

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Section 1 – Licensing conditions and station identification

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D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

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D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.

Section 1 – Licensing conditions and station identification

You are referring to the nature of amateur radio, types of apparatus, inspection and
D.* the local police.
C. ordered to do so by the RSGB.
B. requested to do so by the local police.
A.* the local police.
2C1 7 Resistance Section 2 – Technical aspects
You have three resistors with the values 10Ω, 20Ω and 60Ω. What is the minimum resistance that these resistors can be connected together to provide.
A. 40Ω
B. 30Ω
C. 10Ω
D. 60Ω

2C2 8 Resistance Section 2 – Technical aspects
What are the maximum and minimum output voltages as the potentiometer is adjusted?
A. Max 15  Min 0
B. Max 12  Min 0
C. Max 10  Min 0
D. Max 10  Min 0

2C3 8 Resistance Section 2 – Technical aspects
A radio receiver draws 2A from a 12V power supply. However when the radio is turned off the supply voltage increases to 13V. What is the source resistance?
A. 6.5Ω
B. 1.0Ω
C. 2.0Ω
D. 0.5Ω

2D1 9 Reactive components Section 2 – Technical aspects
The capacitance of a capacitor depends on the
A. charging current and voltage.
B. material between the plates.
C. thickness of the plates.
D. frequency of the applied signal.

2D2 9 Reactive components Section 2 – Technical aspects
Approximately, what is the maximum capacitance that can be achieved by the arrangement of capacitors shown in the diagram?
A. 150pF.
B. 77pF.
C. 310pF.
D. 170pF.

2D3 9 Reactive components Section 2 – Technical aspects
Which type of capacitor must be connected the correct way round?
A. Electrolytic.
B. Variable.
C. Ceramic.
D. Polyester

2D4 10 Reactive components Section 2 – Technical aspects
Forming a wire into a coil in an inductor causes
A. the magnetic field to be concentrated.
B. a decrease in capacitance between turns.
C. a reduction of resistance.
D. a reduction of the stored charge.

2D5 10 Reactive components Section 2 – Technical aspects
What is the minimum inductance of a circuit containing inductors of 1H, 2H and 3H?
A. 0.55H
B. 1.83H
C. 1H
D. 0.5H

2D6 10 Reactive components Section 2 – Technical aspects
Which of the following increases the inductance of a coil?
A. reducing coil diameter.
B. increasing coil diameter.
C. decreasing the number of turns in the coil.
D. increasing the spacing between turns in the coil.

2E1 11 AC theory Section 2 – Technical aspects
A capacitor is able to
A. pass an alternating current.
B. pass a direct current.
C. store energy in a magnetic field.
D. only operate if air spaced.

2E2 11 AC theory Section 2 – Technical aspects
The periodic time for a frequency of 10MHz is
A. 0.1μs
B. 1.0μs
C. 1.0ms
D. 0.1ms

2E3 11 AC theory Section 2 – Technical aspects
The current through and voltage across a component which is a pure reactive (L or C) are displayed on a screen. The bold line shows the current, which line will correctly show the voltage?
A. line 1.
B. line 2.
C. line 3.
D. line 4.

2E4 12 AC theory Section 2 – Technical aspects
The ratio of the RMS potential difference and the RMS current in a capacitor is known as
A. reactance.
B. resistance.
C. inductance.
D. capacitance.

2E5 12 AC theory Section 2 – Technical aspects
The reactance of an inductor is a measure of
A. the amount of energy stored in its magnetic field.
B. the quantity of charge stored in its electric field.
C. the ratio of the RMS current and RMS voltage.
D. the ratio of the RMS current to the peak current.

2E6 12 AC theory Section 2 – Technical aspects
The circuit shown energy is transferred to heat in
A. C and stored in R and L.
B. R and stored in L and C.
C. L and stored in R and C.
D. L and C.
A. 21 MHz.
B. 18.15 MHz.
C. 19.86 MHz.
D. 1.98 MHz.

A long feed wire feeds a radio broadcast transmitter to its antenna. A probe shows the voltage on the line to be at its positive peak at a certain instant in time. A similar probe line towards the antenna will, at the same instant, show:
A. the same size positive peak.
B. the same size negative peak.
C. zero.
D. about half voltage.

A good audio signal is being sampled to convert it to digital for storage and playback later when it sounds distorted. To try to solve the problem the sample rate is doubled but it still sounds distorted. What should be tried next?
A. Try halving the sample rate to reduce the amount of data.
B. Re-recording the original analogue signal and re-sample.
C. Increase the number of data bits to record each sample.
D. Reverse the polarity of the audio leads to the sampling device.

The energy is coupled from the primary to the secondary windings of a transformer by:
A. capacitive coupling.
B. via the magnetic field.
C. the alternating voltage.
D. frequency resonance.

In a tuned circuit the graph shows:
A. L and C in series.
B. L and C in parallel.
C. L and R in series.
D. L and R in parallel.

In a tuned circuit the resonant frequency will be increased by:
A. increasing either L or C.
B. decreasing either L or C.
C. increasing the voltage across either L or C.
D. decreasing the voltage across either L or C.

Which of the following diagrams is a high pass filter?
A. 1
B. 2
C. 3
D. 4

A semiconductor diode, when the voltage applied exceeds the forward voltage:
A. will conduct current in one direction only.
B. conducts current in both directions.
C. amplifies the current.
D. blocks the current in both directions.

The capacitance of a variable capacitance diode:
A. increases with increasing voltage when forward biased.
B. decreases with increasing voltage when forward biased.
C. increases with increasing voltage when reverse biased.
D. increases with decreasing voltage when reverse biased.

The drawing shows a transistor working properly in a circuit. What is the value of b for the transistor?
A. 15
B. 16
C. 45
D. 48

The diagram shows part of a transistor amplifier circuit with all the designed values. The base current is designed to be 100 mA but the resistor is at the limit of its tolerance and the actual base current is 110 mA. What will the actual collector voltage be?
A. 6V
B. 6.6V
C. 5.4V
D. 3.0V

What is the purpose of biasing a transistor?
A. To prevent it causing RF interference to other parts of the circuit.
B. To protect it against heating by limiting the current passing through it.
C. To allow maximum power to be dissipated at the highest possible efficiency.
D. To ensure correct matching to the following stage of the overall circuit.
2I6 18 Semiconductor devices Section 2 – Technical aspects
What is the function of the crystal in the circuit shown?
A. To set the correct biasing for the transistor.
B. To avoid key clicks when the circuit is used for CW.
C. To stabilise the amplitude of the output signal.
D. To set the frequency at which the circuit will operate.

2I7 20 Semiconductor devices Section 2 – Technical aspects
The photograph shows an electronic component often referred to as a
A. semiconductor device
B. integrated circuit
C. surface mount component
D. miniaturised device

2I19 Cells and power supplies Section 2 – Technical aspects
Rechargeable batteries are often marked with a value quoted in Ampere-hours. What does this value mean?
A. An indication of the stored energy when fully charged.
B. The time after which the battery should be recharged.
C. The time for which the battery will power the connected device.
D. The maximum charging current at which the battery can be safely charged.

2I20 Cells and power supplies Section 2 – Technical aspects
Part of a mains powered DC power supply is shown in the diagram. The smoothing capacitor is missing, where
should it be inserted?
A. Between points 1 and 2.
B. Between points 2 and 3.
C. Between points 4 and 5.
D. Between points 1 and 3.

2I21 Cells and power supplies Section 2 – Technical aspects
Which waveform will be seen across the output terminals of this mains powered power supply?
A. Waveform 1.
B. Waveform 2.
C. Waveform 3.
D. Waveform 4.

2I22 Cells and power supplies Section 2 – Technical aspects
What type of component is in the box marked X?
A. Filter.
B. Transformer.
C. Digital controller.
D. Smoothing capacitor.

3A2 21 Transmitter concepts Section 3 – Transmitters and receivers
If an AM transmission has a Depth of Modulation of 0.1 then the audio signal will be
A. fairly quiet.
B. quite loud.
C. low in frequency.
D. high in frequency.

3A3 21 Transmitter concepts Section 3 – Transmitters and receivers
Compared to AM, SSB has
A. the sidebands removed.
B. one sideband removed.
C. the carrier reduced in amplitude.
D. one sideband and no carrier.

3B1 21 Transmitter architecture Section 3 – Transmitters and receivers
One of the functions shown in the block diagram of an SSB transmitter has been put in the wrong place. Which one?
A. A crystal oscillator.
B. An audio amplifier.
C. The frequency synthesiser.
D. The mixer.

3C1 21 Oscillators Section 3 – Transmitters and receivers
Which statement about VFO and crystal oscillators is correct?
A. A VFO is very stable and a crystal oscillator is tuneable.
B. A VFO is tuneable and a crystal oscillator is very stable.
C. The stability of the VFO and crystal oscillators are similar.
D. The tuning range of a crystal oscillator is greater than a VFO.

3C2 21 Oscillators Section 3 – Transmitters and receivers
The stability of an oscillator can be improved by
A. locating the oscillator next to the power amplifier it is intended to drive.
B. running the local oscillator from the common DC supply to the control circuitry.
C. keeping audio and RF circuits housed in separate ventilated enclosures.
D. running the oscillator from its own power supply separate from other circuits.

3C3 21 Oscillators Section 3 – Transmitters and receivers
A direct digital synthesiser generates sine waves by
A. relying on a look-up table of the voltages levels required to form a sine wave.
B. calculating the required voltage levels from downloaded software routines.
C. digitising the levels generated by a controlled variable frequency oscillator.
D. digitally mixing two signals and selecting either the sum or difference output.

3E1 22 Microphone amplifiers and modulators Section 3 – Transmitters and receivers
The output from a balanced modulator contains
A. the carrier modulated with the audio modulating signal.
B. two sidebands but with the carrier suppressed.
C. two sidebands but only one of which is modulated.
D. one sideband only with the carrier suppressed.

3E2 22 Microphone amplifiers and modulators Section 3 – Transmitters and receivers
The SSB filter in a transmitter removes
A. the carrier from the output of the modulator.
B. the carrier and one of the two sidebands.
C. one sideband leaving the carrier and other sideband.
D. one of the two sidebands from the modulated signal.

3E3 22 Microphone amplifiers and modulators Section 3 – Transmitters and receivers
Frequency modulation is achieved by
A. mixing the audio and carrier signals in a mixer circuit.
B. adding the audio signal to the ALC feedback from the modulator.
C. combining the audio and carrier signals in a frequency discriminator.
D. using a variable capacitance diode to control an LC oscillator.
The power amplifier in a transmitter has an efficiency of 60% and provides 50W of RF at its output. How much power is lost as heat?

A. 20W
B. 30W
C. 40W
D. 84W

The power amplifier in a transmitter has an efficiency of 60% and provides 50W of RF at its output. How much power is lost as heat?

A. 20W
B. 30W
C. 40W
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The power amplifier in a transmitter has an efficiency of 60% and provides 50W of RF at its output. How much power is lost as heat?

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B. 30W
C. 40W
D. 84W
Radio propagation: key concepts

Section 5 – Propagation

The magnetic field defines the polarisation of the wave and the electric field leads it by 180 degrees.

The electric field defines the polarisation of the wave and the magnetic field is at right angles to it.

The signal strength received from a ground wave gets weaker with greater distance and weaker with lower frequency.

Standing waves are formed on a feeder when...

- The magnetic field defines the polarisation of the wave and the electric field leads it by 180 degrees.
- The electric field defines the polarisation of the wave and the magnetic field is at right angles to it.

A Yagi antenna has a characteristic impedance of...

- The beam width of a Yagi antenna is the angle between the vertical antenna and the direction of radiated RF.
- An isotropic radiator is a theoretical point source of equal radiation in all directions.

A modern transceiver will have a built in AMU to ensure that the reflected waves from the antenna combine with those from the transmitter.

Standing waves are formed on a feeder when...

- A centre fed half wave dipole will have a feed point impedance of...
- A Yagi antenna has a...
The ionosphere is made up of:
A. radioactive gases.
B. conductive gases.
C. ozone
D. water vapour
Which of the following is true:
A. The D layer absorbs higher frequencies and tends to disappear during the day.
B. The E layer absorbs lower radio frequencies and tends to disappear at night.
C. The D layer is higher than the E layer.
D. The F layer is higher than the F1 layer.
The sunspot cycle is approximately:
A. 1 year.
B. 5 years.
C. 11 years.
D. 10 years.
Which of the following are the layers of the ionosphere from bottom to top:
A. D layer, F1 layer, F2 layer, E layer
B. F1 layer, D layer, F2 layer, E layer
C. F2 layer, F1 layer, D layer, E layer
D. D layer, F1 layer, F2 layer, E layer
The ionosphere is made up of:
A. conductive gases.
B. radioactive gases.
C. ozone
D. water vapour

Which of the following are the layers of the ionosphere from bottom to top:
A. D layer, F1 layer, F2 layer, E layer
B. F1 layer, D layer, F2 layer, E layer
C. F2 layer, F1 layer, D layer, E layer
D. D layer, F1 layer, F2 layer, E layer

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B. F1 layer, D layer, F2 layer, E layer
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B. F1 layer, D layer, F2 layer, E layer
C. F2 layer, F1 layer, D layer, E layer
D. D layer, F1 layer, F2 layer, E layer
Tests to detect harmonic emissions can be carried using:
A. at both lower or multiples of the frequency being tested.
B. a general coverage receiver tuned to the transmitted signals frequency.
C. a general coverage receiver tuned to multiples of the transmitted signals frequency.
D. a decade band on multiples of the frequency being tested.

You suspect that radiated RF interference may be getting into a domestic radio via the mains wiring. To test this you could:
A. fit a dummy load to the antenna of the transmitter to see if the interference stops.
B. reduce the transmitted power until the interference stops.
C. connect the earth terminal of the transmitter to the earth in the house.
D. fit a filter to the transmitter mains power lead.

Which of the following types of antenna installations are likely to give rise to the least amount of RF interference?
A. A dipole 1/4 wave length long.
B. A long wire antenna, end fed at a point closest to the house.
C. A long wire antenna, end fed at a point furthest from the house.
D. A 1/4 wave vertical dipole.

A good RF earth is provided by:
A. the earth terminal of the transmitter to the earth terminal of the transmitter to the earth in the house.
B. a long piece of buried copper rod used as a short thick cable.
C. the network of the rising water mains through a cul-de-sac.
D. the network of the rising water mains through a cul-de-sac.

The most important risk of placing a transmitting antenna in the loft close to mains wiring and TV aerials is that:
A. the noise of the mains wiring will be heard on the amateur receiver, masking weak signals.
B. the roof will cause considerable loss of signal strength both on transmit and receive.
C. the TV signals are likely to interfere with the amateur radio equipment when receiving.
D. amateur transmissions will be picked up by the mains TV wiring and conducted into other devices.

When installing an amateur radio transmitter in a motor vehicle care should be taken, as far as possible, to:
A. the transmitter and antenna wiring is guided with the vehicle wiring.
B. run the transmitter and antenna wiring at right angles to the vehicle wiring.
C. tie the transmitter and antenna wiring to the vehicle wiring.
D. run the transmitter and antenna wiring underneath the vehicle.

Which of the following diagrams shows the best position for mounting an amateur radio antenna on a vehicle?
A. 
B. 
C. 
D. 

You are having a conversation with PA1ABC. PA1ABC is located in:
A. Papua New Guinea.
B. The Philippines.
C. The Netherlands.
D. Canada.

You are engaged in a contact with another amateur radio and he requests you to QRO. You are being asked to:
A. change frequency.
B. increase power.
C. acknowledge the contact.
D. suspend operation of your station.

In which of the following bands is it permissible to hold an SSB contest.
A. Frequency of transmission.
B. postal address.
C. Postcode.
D. Serial number.

You are listening to a transmission from an amateur satellite and observe that the received frequency will appear:
A. stronger at the end of the transmission and weaker at the start.
B. stronger at the start of the transmission and weaker at the end.
C. at a lower frequency at the start of the transmission and higher at the end.
D. at a lower frequency at the end of the transmission and higher at the start.

When communicating with an amateur satellite that is only within range for a few minutes, the signal received will appear:
A. Always in the same amateur band.
B. Generally in the same amateur band.
C. Generally in different amateur bands.
D. Always in different amateur bands.

During a contest, radio amateurs usually exchange signal strength (RST) information and which of the following information?
A. Serial number.
B. Postal address.
C. Postcode.
D. Frequency of transmission.

Testing to detect harmonic emissions can be carried using:
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D. a decade band on multiples of the frequency being tested.

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B. A long wire antenna, end fed at a point closest to the house.
C. A long wire antenna, end fed at a point furthest from the house.
D. A 1/4 wave vertical dipole.

A good RF earth is provided by:
A. the earth terminal of the transmitter to the earth terminal of the transmitter to the earth in the house.
B. a long piece of buried copper rod used as a short thick cable.
C. the network of the rising water mains through a cul-de-sac.
D. the network of the rising water mains through a cul-de-sac.

The most important risk of placing a transmitting antenna in the loft close to mains wiring and TV aerials is that:
A. the noise of the mains wiring will be heard on the amateur receiver, masking weak signals.
B. the roof will cause considerable loss of signal strength both on transmit and receive.
C. the TV signals are likely to interfere with the amateur radio equipment when receiving.
D. amateur transmissions will be picked up by the mains TV wiring and conducted into other devices.

When installing an amateur radio transmitter in a motor vehicle care should be taken, as far as possible, to:
A. the transmitter and antenna wiring is guided with the vehicle wiring.
B. run the transmitter and antenna wiring at right angles to the vehicle wiring.
C. tie the transmitter and antenna wiring to the vehicle wiring.
D. run the transmitter and antenna wiring underneath the vehicle.

Which of the following diagrams shows the best position for mounting an amateur radio antenna on a vehicle?
A. 
B. 
C. 
D. 

You are having a conversation with PA1ABC. PA1ABC is located in:
A. Papua New Guinea.
B. The Philippines.
C. The Netherlands.
D. Canada.

You are engaged in a contact with another amateur radio and he requests you to QRO. You are being asked to:
A. change frequency.
B. increase power.
C. acknowledge the contact.
D. suspend operation of your station.

In which of the following bands is it permissible to hold an SSB contest.
A. Frequency of transmission.
B. postal address.
C. Postcode.
D. Serial number.

You are listening to a transmission from an amateur satellite and observe that the received frequency will appear:
A. stronger at the end of the transmission and weaker at the start.
B. stronger at the start of the transmission and weaker at the end.
C. at a lower frequency at the start of the transmission and higher at the end.
D. at a lower frequency at the end of the transmission and higher at the start.

When communicating with an amateur satellite that is only within range for a few minutes, the signal received will appear:
A. Always in the same amateur band.
B. Generally in the same amateur band.
C. Generally in different amateur bands.
D. Always in different amateur bands.
When communicating through an amateur satellite your transmit power should be as low as possible.

- **A.** Power should be as low as possible.
- **B.** Power should be as high as possible.
- **C.** Frequency should be as low as possible.
- **D.** Frequency should be as high as possible.

When designing high voltage circuits it is a good idea to place suitable resistors in parallel with smoothing capacitors.

- **A.** In parallel with smoothing capacitors.
- **B.** In parallel with all capacitors.
- **C.** In series with smoothing capacitors.
- **D.** In series with all capacitors.

The symbol shown on an item of mains powered electrical apparatus indicates that the equipment:

- **A.** Must be connected to an RF earth.
- **B.** Must be connected to the mains earth.
- **C.** Does not need to be connected to the mains earth.
- **D.** Requires a waveguide to operate correctly.

A transceiver powered from the mains uses 15 watts on receive and 750 watts on transmit. Which of the following fuses would be suitable for the mains plug?

- **A.** 3 amps.
- **B.** 5 amps.
- **C.** 10 amps.
- **D.** 13 amps.

If working on live equipment, you should:

- **A.** Ensure that your body is fully earthed.
- **B.** Wear protective goggles.
- **C.** Use both hands.
- **D.** Be completely isolated from earth.

The main hazard when wearing metal jewellery or watch straps whilst working on vehicle electric systems is:

- **A.** Electrocuted due to the high voltages.
- **B.** Burns or fire due to high currents.
- **C.** Static electricity shocks.
- **D.** Explosion caused by Helium emitted from the battery.

To avoid injury when using screwdrivers, saws and similar tools it is advisable to:

- **A.** Keep your tools sharp.
- **B.** Work from behind the tool.
- **C.** Keep your tools in a toolbox.
- **D.** Use a tool belt.

When using a saw or a drill on an item, to ensure safety you should:

- **A.** Wear gloves and a face mask.
- **B.** Secure the item in a vice or clamp.
- **C.** Ensure the item is earthed.
- **D.** Ensure plenty of ventilation.

Before applying power to an electric drill ensure that:

- **A.** The drill is fully earthed.
- **B.** Any chuck key used is removed.
- **C.** Any chuck key is fully tightened.
- **D.** The drill is set to rotate anti-clockwise.

The correct use of a centre punch will:

- **A.** Reduce the chance of a drill bit slipping.
- **B.** Ensure accurate sawing.
- **C.** Make small holes when required.
- **D.** Assist accurate marking out.

A bench mounted pillar drill is safer to use because:

- **A.** It does not generate swarf or sharp particles.
- **B.** It is quieter to use.
- **C.** It is easier to control.
- **D.** Both hands are needed to operate it.

A gas discharge arrester is used to:

- **A.** Prevent a lightning strike.
- **B.** Protect against build up of static charges.
- **C.** Prevent static interference to reception.
- **D.** Protect against high voltages.

You wish to measure the voltage in a mains power supply using an analogue multi meter. Which of the following settings would be the most appropriate for your initial measurement?

- **A.** 1,000 ohms.
- **B.** 1,000 volts AC.
- **C.** 25 volts AC.
- **D.** 25 amps DC.

In the circuit shown:

- **A.** Meter 1 is an ammeter and meter 2 an ammeter.
- **B.** Meter 1 is a voltmeter and meter 2 an ammeter.
- **C.** Meter 1 is an ammeter and meter 2 is a voltmeter.
- **D.** Meter 1 is an ammeter and meter 2 are both ammeters.

You wish to measure the voltage in a mains power supply using an analogue multi meter. Which of the following settings would be the most appropriate for your initial measurement?

- **A.** 4,000 volts.
- **B.** 1,000 volts AC.
- **C.** 35 volts AC.
- **D.** 35 volts DC.

In the circuit shown:

- **A.** Voltage meter 1 is a quadrature and meter 2 an ammeter.
- **B.** Voltage meter 1 is an ammeter and meter 2 is a voltmeter.
- **C.** Voltage meter 1 is an ammeter and meter 2 is a quadrature.
- **D.** Voltage meter 1 is an ammeter and meter 2 are both ammeters.

A separate bar of metal has an output of 15 watts which is connected to a feeder with a loss of 5 watts and finally into an antenna with a gain of 15 dB. What is the effective radiated power from the antenna?

- **A.** 2 Watts.
- **B.** 45 Watts.
- **C.** 75 Watts.
- **D.** 225 Watts.
A resistor is marked 5k6. Its resistance will be close to
A. 5.6 ohms
B. 56 ohms
C. 560 ohms
D. 5600 ohms

Thin metal sheet is often used in the construction of radio equipment to
A. reduce unwanted radiation between stages.
B. assist with component cooling.
C. isolate high voltages from low voltages.
D. increase the rigidity of the radio chassis.

Soldering is a method of
A. heating flux to form glue which holds the items to be connected together
B. using a hot iron to fuse the wires being connected together
C. welding metal surfaces being connected together
D. melting a metal alloy to flow around the components being connected together.

Flux is used when soldering to:
A. help prevent an oxide layer forming on the surfaces to be soldered.
B. reduce the temperature required for soldering.
C. stick the surfaces together so that they do not move when being soldered.
D. clean the surfaces of the components being soldered.

Which of the following metals is the easiest to solder in radio circuitry?
A. Aluminium.
B. Stainless Steel.
C. Copper.
D. Cast Iron.

When in use, the tip of a soldering iron should be kept clear of oxide and tinned to
A. improve the conduction of heat into the soldered joint.
B. prevent the soldering iron from overheating.
C. help solder flow from the tip to the soldered joint.
D. retain the amount of flux used.