B-005-006-002 **(C)**

How many watts of electrical power are used by a 12 volt DC light bulb that draws 0.2 ampere?

A 24 watts
B 6 watts
C 2.4 watts
D 60 watts

B-005-006-003 **(C)**

The DC input power of a transmitter operating at 12 volts and drawing 500 milliamperes would be:

A 500 watts
B 12 watts
C 6 watts
D 20 watts

B-005-006-004 **(A)**

When two 500 ohm 1 watt resistors are connected in series, the maximum total power that can be dissipated by the resistors is:

A 2 watts
B 1 watt
C 1/2 watt
D 4 watts

B-005-006-005 **(C)**

When two 500 ohm 1 watt resistors are connected in parallel, they can dissipate a maximum total power of:

A 1 watt
B 4 watts
C 2 watts
D 1/2 watt

B-005-006-006 **(C)**

If the voltage applied to two resistors in series is doubled, how much will the total power change?

A Double
B No change
C Increase four times
D Decrease to half

B-005-006-007 **(D)**

Which combination of resistors could make up a 50 ohms dummy load capable of safely dissipating 5 watts?

A Two 5-watt 100 ohms resistors in series
B Two 2-watt 25 ohms resistors in series
C Ten quarter-watt 500 ohms resistors in parallel
D Four 2-watt 200 ohms resistors in parallel

B-005-006-008 **(A)**

A 12 volt light bulb is rated at a power of 30 watts. The current drawn would be:

A 30/12 amperes
B 18 amperes
C 360 amperes
D 12/30 amperes

B-005-006-009 **(B)**

If two 10 ohm resistors are connected in series with a 10 volt battery, the power consumption would be:

A 100 watts
B 5 watts
C 10 watts
D 20 watts

B-005-006-010 **(B)**

One advantage of replacing a 50 ohm resistor with a parallel combination of two similarly rated 100 ohm resistors is that the parallel combination will have:

A lesser resistance and similar power rating
B the same resistance but greater power rating
C the same resistance but lesser power rating
D greater resistance and similar power rating

B-005-006-011 **(D)**

Resistor wattage ratings are:

A calculated according to physical size and tolerance rating
B expressed in joules
C variable in steps of one hundred
D determined by heat dissipation qualities

B-005-007-001 **(A)**

What term means the number of times per second that an alternating current flows back and forth?

A Frequency
B Speed
C Pulse rate
D Inductance

B-005-007-002 **(D)**

Approximately what frequency range can most humans hear?

A 20 000 - 30 000 Hz
B 200 - 200 000 Hz
C 0 - 20 Hz
D 20 - 20 000 Hz

B-005-007-003 **(D)**

Why do we call signals in the range 20 Hz to 20 000 Hz audio frequencies?

A Because the human ear cannot sense anything in this range
B Because this range is too low for radio energy
C Because the human ear can sense radio waves in this range
D Because the human ear can sense sounds in this range

B-005-007-004 **(D)**

Electrical energy at a frequency of 7125 kHz is in what frequency range?

A Audio
B Hyper
C Super-high
D Radio

B-005-007-005 **(C)**

What is the name for the distance an AC signal travels during one complete cycle?

A Waveform
B Wave spread
C Wavelength
D Wave speed

B-005-007-006 **(D)**

What happens to a signal's wavelength as its frequency increases?

A It gets longer
B It stays the same
C It disappears
D It gets shorter

B-005-007-007 **(C)**

What happens to a signal's frequency as its wavelength gets longer?

A It stays the same
B It goes up
C It goes down
D It disappears

B-005-007-008 **(D)**

What does 60 hertz (Hz) mean?

A 6000 metres per second
B 60 metres per second
C 6000 cycles per second
D 60 cycles per second

B-005-007-009 **(A)**

If the frequency of the waveform is 100 Hz, the time for one cycle is:

A 0.01 second
B 10 seconds
C 0.0001 second
D 1 second

B-005-007-010 **(B)**

Current in an AC circuit goes through a complete cycle in 0.1 second. This means the AC has a frequency of:

A 1000 Hz
B 10 Hz
C 1 Hz
D 100 Hz

B-005-007-011 **(C)**

A signal is composed of a fundamental frequency of 2 kHz and another of 4 kHz. This 4 kHz signal is referred to as:

A the DC component of the main signal
B a dielectric signal of the main signal
C a harmonic of the 2 kHz signal
D a fundamental of the 2 kHz signal

B-005-008-001 **(A)**

A two-times increase in power results in a change of how many dB?

A 3 dB higher
B 6 dB higher
C 12 dB higher
D 1 dB higher

B-005-008-002 **(A)**

How can you decrease your transmitter's power by 3 dB?

A Divide the original power by 2
B Divide the original power by 1.5
C Divide the original power by 3
D Divide the original power by 4

B-005-008-003 **(D)**

How can you increase your transmitter's power by 6 dB?

A Multiply the original power by 3
B Multiply the original power by 2
C Multiply the original power by 1.5
D Multiply the original power by 4

B-005-008-004 **(B)**

If a signal-strength report is "10 dB over S9", what should the report be if the transmitter power is reduced from 1500 watts to 150 watts?

A S9 plus 5 dB
B S9
C S9 plus 3 dB
D S9 minus 10 dB

B-005-008-005 **(C)**

If a signal-strength report is "20 dB over S9", what should the report be if the transmitter power is reduced from 1500 watts to 150 watts?

A S9 plus 3 dB
B S9
C S9 plus 10 dB
D S9 plus 5 dB

B-005-008-006 **(A)**

The unit "decibel" is used to indicate:

A a mathematical ratio
B an oscilloscope wave form
C certain radio waves
D a single side band signal

B-005-008-007 **(A)**

The power output from a transmitter increases from 1 watt to 2 watts. This is a dB increase of:

A 3
B 30
C 6
D 1

B-005-008-008 **(A)**

The power of a transmitter is increased from 5 watts to 50 watts by a linear amplifier. The power gain, expressed in dB, is:

A 10 dB
B 30 dB
C 40 dB
D 20 dB

B-005-008-009 **(A)**

You add a 9 dB gain amplifier to your 2 watt handheld. What is the power output of the combination?

A 16 watts
B 11 watts
C 20 watts
D 18 watts

B-005-008-010 **(C)**

The power of a transmitter is increased from 2 watts to 8 watts. This is a power gain of _____ dB.

A 8 dB
B 9 dB
C 6 dB
D 3 dB

B-005-008-011 **(C)**

A local amateur reports your 100W 2M simplex VHF transmission as 30 dB over S9. To reduce your signal to S9, you would reduce your power to _____ watts.

A 10 W
B 33.3 W
C 100 mW
D 1 W

B-005-009-001 **(C)**

If two equal-value inductors are connected in series, what is their total inductance?

A The same as the value of either inductor
B The value of one inductor times the value of the other
C Twice the value of one inductor
D Half the value of one inductor

B-005-009-002 **(D)**

If two equal-value inductors are connected in parallel, what is their total inductance?

A Twice the value of one inductor
B The same as the value of either inductor
C The value of one inductor times the value of the other
D Half the value of one inductor

B-005-009-003 **(D)**

If two equal-value capacitors are connected in series, what is their total capacitance?

A Twice the value of one capacitor
B The same as the value of either capacitor
C The value of one capacitor times the value of the other
D Half the value of either capacitor

B-005-009-004 **(D)**

If two equal-value capacitors are connected in parallel, what is their total capacitance?

A The same as the value of either capacitor
B The value of one capacitor times the value of the other
C Half the value of one capacitor
D Twice the value of one capacitor

B-005-009-005 **(D)**

What determines the inductance of a coil?

A The core material, the number of turns used to wind the coil and the frequency of the current through the coil
B The coil diameter, the number of turns of wire used to wind the coil and the type of metal used for the wire
C The core material, the coil diameter, the length of the coil and whether the coil is mounted horizontally or vertically
D The core material, the coil diameter, the length of the coil and the number of turns of wire used to wind the coil

B-005-009-006 **(C)**

What determines the capacitance of a capacitor?

A The number of plates, the spacing between the plates and whether the dielectric material is N type or P type
B The material between the plates, the area of one plate, the number of plates and the material used for the protective coating
C The material between the plates, the surface area of the plates, the number of plates and the spacing between the plates
D The material between the plates, the number of plates and the size of the wires connected to the plates

B-005-009-008 **(B)**

To replace a faulty 10 millihenry choke, you could use two:

A 5 millihenry chokes in parallel
B 5 millihenry chokes in series
C 20 millihenry chokes in series
D 30 millihenry chokes in parallel

B-005-009-009 **(A)**

Three 15 microfarad capacitors are wired in series. The total capacitance of this arrangement is:

A 5 microfarads
B 45 microfarads
C 12 microfarads
D 18 microfarads

B-005-009-010 **(D)**

Which series combinations of capacitors would best replace a faulty 10 microfarad capacitor?

A Two 10 microfarad capacitors
B Twenty 2 microfarad capacitors
C Ten 2 microfarad capacitors
D Two 20 microfarad capacitors

B-005-009-011 **(D)**

The total capacitance of two or more capacitors in series is:

A found by adding each of the capacitors together and dividing by the total number of capacitors
B found by adding each of the capacitors together
C always greater than the largest capacitor
D always less than the smallest capacitor

B-005-010-001 **(D)**

How does a coil react to AC?

A As the amplitude of the applied AC increases, the reactance decreases
B As the amplitude of the applied AC increases, the reactance increases
C As the frequency of the applied AC increases, the reactance decreases
D As the frequency of the applied AC increases, the reactance increases

B-005-010-002 **(D)**

How does a capacitor react to AC?

A As the frequency of the applied AC increases, the reactance increases
B As the amplitude of the applied AC increases, the reactance increases
C As the amplitude of the applied AC increases, the reactance decreases
D As the frequency of the applied AC increases, the reactance decreases

B-005-010-003 **(D)**

The reactance of capacitors increases as:

A applied voltage increases
B applied voltage decreases
C frequency increases
D frequency decreases

B-005-010-004 **(B)**

In inductances, AC may be opposed by both resistance of winding wire and reactance due to inductive effect. The term which includes resistance and reactance is:

A capacitance
B impedance
C resonance
D inductance

B-005-010-005 **(B)**

Capacitive reactance:

A increases with the time constant
B decreases as frequency increases
C applies only to series RLC circuits
D increases as frequency increases

B-005-010-006 **(D)**

Inductive reactance may be increased by:

A a decrease in the applied frequency
B a decrease in the supplied current
C an increase in the applied voltage
D an increase in the applied frequency

B-005-010-007 **(C)**

What property allows a coil wound on a ferrite core to mitigate the effects of an offending radio signal?

A Low reactance at audio frequencies
B High reactance at audio frequencies
C High reactance at radio frequencies
D Low reactance at radio frequencies

B-005-010-008 **(A)**

What property allows an RF bypass capacitor on an audio circuit to divert an offending radio signal?

A Low reactance at radio frequencies
B High reactance at radio frequencies
C Low reactance at audio frequencies
D High reactance at audio frequencies

B-005-010-009 **(A)**

What property allows an RF bypass capacitor to have little effect on an audio circuit?

A High reactance at low frequencies
B Low reactance at high frequencies
C High reactance at high frequencies
D Low reactance at low frequencies

B-005-010-010 **(D)**

What property allows an RF choke coil to have little effect on signals meant to flow through the coil?

A High reactance at low frequencies
B Low reactance at high frequencies
C High reactance at high frequencies
D Low reactance at low frequencies

B-005-010-011 **(D)**

In general, the reactance of inductors increases with:

A decreasing AC frequency
B decreasing applied voltage
C increasing applied voltage
D increasing AC frequency

B-005-011-001 **(D)**

If no load is attached to the secondary winding of a transformer, what is current in the primary winding called?

A Direct current
B Latent current
C Stabilizing current
D Magnetizing current

B-005-011-002 **(B)**

A transformer operates a 6.3 volt 2 ampere light bulb from its secondary winding. The input power to the primary winding is approximately:

A 3 watts
B 13 watts
C 6 watts
D 8 watts

B-005-011-003 **(B)**

A transformer has a 240 volt primary that draws a current of 250 milliamperes from the mains supply. Assuming no losses and only one secondary, what current would be available from the 12 volt secondary?

A 50 amperes
B 5 amperes
C 215 amperes
D 25 amperes

B-005-011-004 **(C)**

In a mains power transformer, the primary winding has 250 turns, and the secondary has 500. If the input voltage is 120 volts, the likely secondary voltage is:

A 610 V
B 26 V
C 240 V
D 480 V

B-005-011-005 **(B)**

The strength of the magnetic field around a conductor in air is:

A inversely proportional to the voltage on the conductor
B directly proportional to the current in the conductor
C inversely proportional to the diameter of the conductor
D directly proportional to the diameter of the conductor

B-005-011-006 **(A)**

Maximum induced voltage in a coil occurs when:

A current is going through its greatest rate of change
B the current through the coil is of a DC nature
C current is going through its least rate of change
D the magnetic field around the coil is not changing