A-003-006-005 **(D)**

Voltmeter sensitivity is usually expressed in ohms per volt. This means that a voltmeter with a sensitivity of 20 kilohms per volt would be a:

A 1 milliampere meter
B 50 milliampere meter
C 100 milliampere meter
D 50 microampere meter

A-003-006-006 **(D)**

The sensitivity of a voltmeter, whose resistance is 150 000 ohms on the 150-volt range, is:

A 100 000 ohms per volt
B 10 000 ohms per volt
C 150 ohms per volt
D 1000 ohms per volt

A-003-006-007 **(C)**

The range of a DC ammeter can easily be extended by:

A changing the internal inductance of the meter
B changing the internal capacitance of the meter to resonance
C connecting an external resistance in parallel with the internal resistance
D connecting an external resistance in series with the internal resistance

A-003-006-008 **(C)**

What happens inside a multimeter when you switch it from a lower to a higher voltage range?

A Resistance is reduced in parallel with the meter
B Resistance is added in parallel with the meter
C Resistance is added in series with the meter
D Resistance is reduced in series with the meter

A-003-006-009 **(D)**

How can the range of an ammeter be increased?

A By adding resistance in series with the circuit under test
B By adding resistance in parallel with the circuit under test
C By adding resistance in series with the meter
D By adding resistance in parallel with the meter

A-003-006-010 **(B)**

Where should an RF wattmeter be connected for the most accurate readings of transmitter output power?

A At the antenna feed point
B At the transmitter output connector
C One-half wavelength from the transmitter output
D One-half wavelength from the antenna feed point

A-003-006-011 **(C)**

At what line impedance do most RF wattmeters usually operate?

A 100 ohms
B 300 ohms
C 50 ohms
D 25 ohms

A-004-001-001 **(D)**

For the same transformer secondary voltage, which rectifier has the highest average output voltage?

A Half-wave
B Quarter-wave
C Full-wave centre-tap
D Bridge

A-004-001-002 **(A)**

In a half-wave power supply with a capacitor input filter and a load drawing little or no current, the peak inverse voltage (PIV) across the diode can reach _____ times the RMS voltage.

A 2.8
B 0.45
C 5.6
D 1.4

A-004-001-003 **(D)**

In a full-wave centre-tap power supply, regardless of load conditions, the peak inverse voltage (PIV) will be _____ times the RMS voltage:

A 0.636
B 0.707
C 1.4
D 2.8

A-004-001-004 **(B)**

A full-wave bridge rectifier circuit makes use of both halves of the AC cycle, but unlike the full-wave centre-tap rectifier circuit it does not require:

A diodes across each leg of the transformer
B a centre-tapped secondary on the transformer
C any output filtering
D a centre-tapped primary on the transformer

A-004-001-005 **(B)**

For a given transformer the maximum output voltage available from a full-wave bridge rectifier circuit will be:

A the same as the half-wave rectifier
B double that of the full-wave centre-tap rectifier
C half that of the full-wave centre-tap rectifier
D the same as the full-wave centre-tap rectifier

A-004-001-006 **(D)**

The ripple frequency produced by a full-wave power supply connected to a normal household circuit is:

A 60 Hz
B 90 Hz
C 30 Hz
D 120 Hz

A-004-001-007 **(D)**

The ripple frequency produced by a half-wave power supply connected to a normal household circuit is:

A 90 Hz
B 120 Hz
C 30 Hz
D 60 Hz

A-004-001-008 **(D)**

Full-wave voltage doublers:

A create four times the output voltage of half-wave doublers
B use less power than half-wave doublers
C are used only in high-frequency power supplies
D use both halves of an AC wave

A-004-001-009 **(D)**

What are the two major ratings that must not be exceeded for silicon-diode rectifiers used in power-supply circuits?

A Average power; average voltage
B Capacitive reactance; avalanche voltage
C Peak load impedance; peak voltage
D Peak inverse voltage; average forward current

A-004-001-010 **(C)**

In a high voltage power supply, why should a resistor and capacitor be wired in parallel with the power-supply rectifier diodes?

A To decrease the output voltage
B To ensure that the current through each diode is about the same
C To equalize voltage drops and guard against transient voltage spikes
D To smooth the output waveform

A-004-001-011 **(A)**

What is the output waveform of an unfiltered full-wave rectifier connected to a resistive load?

A A series of pulses at twice the frequency of the AC input
B A steady DC voltage
C A sine wave at half the frequency of the AC input
D A series of pulses at the same frequency as the AC input

A-004-002-001 **(C)**

Filter chokes are rated according to:

A power loss
B breakdown voltage
C inductance and current-handling capacity
D reactance at 1000 Hz

A-004-002-002 **(A)**

Which of the following circuits gives the best regulation, under similar load conditions?

A A full-wave rectifier with a choke input filter
B A half-wave bridge rectifier with a capacitor input filter
C A half-wave rectifier with a choke input filter
D A full-wave rectifier with a capacitor input filter

A-004-002-003 **(C)**

The advantage of the capacitor input filter over the choke input filter is:

A improved voltage regulation
B lower peak rectifier currents
C a higher terminal voltage output
D better filtering action or smaller ripple voltage

A-004-002-004 **(C)**

With a normal load, the choke input filter will give the:

A greatest ripple frequency
B highest output voltage
C best regulated output
D greatest percentage of ripple

A-004-002-005 **(C)**

There are two types of filters in general use in a power supply. They are called:

A choke input and capacitor output
B choke output and capacitor input
C choke input and capacitor input
D choke output and capacitor output

A-004-002-006 **(A)**

The main function of the bleeder resistor in a power supply is to provide a discharge path for the capacitor in the power supply. But it may also be used for a secondary function, which is to:

A improve voltage regulation
B provide a ground return for the transformer
C inhibit the flow of current through the supply
D act as a secondary smoothing device in conjunction with the filter

A-004-002-007 **(C)**

In a power supply, series chokes will:

A impede the passage of DC but will pass the AC component
B impede both DC and AC
C readily pass the DC but will impede the flow of the AC component
D readily pass the DC and the AC component

A-004-002-008 **(D)**

When using a choke input filter, a minimum current should be drawn all the time when the device is switched on. This can be accomplished by:

A utilizing a full-wave bridge rectifier circuit
B placing an ammeter in the output circuit
C increasing the value of the output capacitor
D including a suitable bleeder resistance

A-004-002-009 **(D)**

In the design of a power supply, the designer must be careful of resonance effects because the ripple voltage could build up to a high value. The components that must be carefully selected are:

A the bleeder resistor and the first choke
B first capacitor and second capacitor
C first choke and second capacitor
D first choke and first capacitor

A-004-002-010 **(C)**

Excessive rectifier peak current and abnormally high peak inverse voltages can be caused in a power supply by the filter forming a:

A parallel resonant circuit with the first choke and second capacitor
B tuned inductance in the filter choke
C series resonant circuit with the first choke and first capacitor
D short circuit across the bleeder

A-004-002-011 **(A)**

In a properly designed choke input filter power supply, the no-load voltage across the filter capacitor will be about nine-tenths of the AC RMS voltage; yet it is advisable to use capacitors rated at the peak transformer voltage. Why is this large safety margin suggested?

A Under no-load conditions and a burned-out bleeder, voltages could reach the peak transformer voltage
B Resonance can be set up in the filter producing high voltages
C Under heavy load, high currents and voltages are produced
D Under no-load conditions, the current could reach a high level

A-004-003-001 **(A)**

What is one characteristic of a linear electronic voltage regulator?

A The conduction of a control element is varied in direct proportion to the line voltage or load current
B It has a ramp voltage at its output
C A pass transistor switches from its "on" state to its "off" state
D The control device is switched on or off, with the duty cycle proportional to the line or load conditions

A-004-003-002 **(D)**

What is one characteristic of a switching voltage regulator?

A The conduction of a control element is varied in direct proportion to the line voltage or load current
B It provides more than one output voltage
C It gives a ramp voltage at its output
D The control device is switched on and off, with the duty cycle proportional to the line or load conditions

A-004-003-003 **(D)**

What device is typically used as a stable reference voltage in a linear voltage regulator?

A An SCR
B A varactor diode
C A junction diode
D A Zener diode

A-004-003-004 **(C)**

What type of linear regulator is used in applications requiring efficient utilization of the primary power source?

A A constant current source
B A shunt current source
C A series regulator
D A shunt regulator

A-004-003-005 **(A)**

What type of linear voltage regulator is used in applications requiring a constant load on the unregulated voltage source?

A A shunt regulator
B A constant current source
C A shunt current source
D A series regulator

A-004-003-006 **(D)**

How is remote sensing accomplished in a linear voltage regulator?

A An error amplifier compares the input voltage to the reference voltage
B A load connection is made outside the feedback loop
C By wireless inductive loops
D A feedback connection to an error amplifier is made directly to the load

A-004-003-007 **(D)**

What is a three-terminal regulator?

A A regulator that supplies three voltages at a constant current
B A regulator containing three error amplifiers and sensing transistors
C A regulator that supplies three voltages with variable current
D A regulator containing a voltage reference, error amplifier, sensing resistors and transistors, and a pass element

A-004-003-008 **(A)**

In addition to an input voltage range what are the important characteristics of a three-terminal regulator?

A Output voltage and maximum output current
B Maximum output voltage and minimum output current
C Minimum output voltage and maximum output current
D Output voltage and minimum output current

A-004-003-009 **(B)**

What type of voltage regulator contains a voltage reference, error amplifier, sensing resistors and transistors, and a pass element in one package?

A A Zener regulator
B A three-terminal regulator
C An op-amp regulator
D A switching regulator

A-004-003-010 **(C)**

When extremely low ripple is required, or when the voltage supplied to the load must remain constant under conditions of large fluctuations of current and line voltage, a closed-loop amplifier is used to regulate the power supply. There are two main categories of electronic regulators. They are:

A linear and non-linear
B stiff and switching
C linear and switching
D non-linear and switching

A-004-003-011 **(C)**

A modern type of regulator, which features a reference, high-gain amplifier, temperature-compensated voltage sensing resistors and transistors as well as a pass element is commonly referred to as a:

A twenty-four pin terminal regulator
B six-terminal regulator
C three-terminal regulator
D nine-pin terminal regulator

A-004-004-001 **(A)**

In a series-regulated power supply, the power dissipation of the pass transistor is:

A directly proportional to the load current and the input/output voltage differential
B the inverse of the load current and the input/output voltage differential
C dependent upon the peak inverse voltage appearing across the Zener diode
D indirectly proportional to the load voltage and the input/output voltage differential

A-004-004-002 **(C)**

In any regulated power supply, the output is cleanest and the regulation is best:

A across the load
B at the output of the pass transistor
C at the point where the sampling network or error amplifier is connected
D across the secondary of the pass transistor

A-004-004-003 **(D)**

When discussing a power supply the_____ resistance is equal to the output voltage divided by the total current drawn, including the current drawn by the bleeder resistor:

A ideal
B rectifier
C differential
D load

A-004-004-004 **(D)**

The regulation of long-term changes in the load resistance of a power supply is called:

A active regulation
B analog regulation
C dynamic regulation
D static regulation

A-004-004-005 **(C)**

The regulation of short-term changes in the load resistance of a power supply is called:

A analog regulation
B active regulation
C dynamic regulation
D static regulation

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

The dynamic regulation of a power supply is improved by increasing the value of:

A the bleeder resistor
B the output capacitor
C the choke
D the input capacitor

A-004-004-007 **(B)**

The output capacitor, in a power supply filter used to provide power for an SSB or CW transmitter, will give better dynamic regulation if:

A it is placed in series with other capacitors
B the output capacitance is increased
C the negative terminal of the electrolytic capacitor is connected to the positive and the positive terminal to ground
D a battery is placed in series with the output capacitor

A-004-004-008 **(A)**

In a regulated power supply, four diodes connected together in a BRIDGE act as:

A a rectifier
B equalization across the transformer
C matching between the secondary of the power transformer and the filter
D a tuning network

A-004-004-009 **(D)**

In a regulated power supply, components that conduct alternating current at the input before the transformer and direct current before the output are:

A capacitors
B diodes
C chokes
D fuses

A-004-004-010 **(C)**

In a regulated power supply, the output of the electrolytic filter capacitor is connected to the:

A solid-state by-pass circuit
B matching circuit for the load
C voltage regulator
D pi filter

A-004-004-011 **(D)**

In a regulated power supply, a diode connected across the input and output terminals of a regulator is used to:

A provide an RF by-pass for the voltage control
B provide additional capacity
C protect the regulator from voltage fluctuations in the primary of the transformer
D protect the regulator from reverse voltages

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

How is the positive feedback coupled to the input in a Hartley oscillator?

A Through a neutralizing capacitor
B Through a tapped coil
C Through a capacitive divider
D Through link coupling

A-005-001-002 **(A)**

How is positive feedback coupled to the input in a Colpitts oscillator?

A Through a capacitive divider
B Through a tapped coil
C Through a neutralizing capacitor
D Through a link coupling

A-005-001-003 **(C)**

How is positive feedback coupled to the input in a Pierce oscillator?

A Through link coupling
B Through a tapped coil
C Through capacitive coupling
D Through a neutralizing capacitor

A-005-001-004 **(D)**

Why is the Colpitts oscillator circuit commonly used in a VFO?

A It can be used with or without crystal lock-in
B The frequency is a linear function with load impedance
C It has high output power
D It is stable