

Week 3 Amateur Radio General Questions

Effective July 1, 2015

General Chapter 4, Components and Circuits

G4B - Test and monitoring equipment; two-tone test

G4B01 (D)

What item of test equipment contains horizontal and vertical channel amplifiers?

- A. An ohmmeter
- B. A signal generator
- C. An ammeter
- D. An oscilloscope

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G4B02 (D)

Which of the following is an advantage of an oscilloscope versus a digital voltmeter?

- A. An oscilloscope uses less power
- B. Complex impedances can be easily measured
- C. Input impedance is much lower
- D. Complex waveforms can be measured

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G4B03 (A)

Which of the following is the best instrument to use when checking the keying waveform of a CW transmitter?

- A. An oscilloscope
- B. A field strength meter
- C. A sidetone monitor
- D. A wavemeter

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G4B04 (D)

What signal source is connected to the vertical input of an oscilloscope when checking the RF envelope pattern of a transmitted signal?

- A. The local oscillator of the transmitter
- B. An external RF oscillator
- C. The transmitter balanced mixer output
- D. The attenuated RF output of the transmitter

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G4B05 (D)

Why is high input impedance desirable for a voltmeter?

- A. It improves the frequency response
- B. It decreases battery consumption in the meter
- C. It improves the resolution of the readings
- D. It decreases the loading on circuits being measured

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G4B06 (C)

What is an advantage of a digital voltmeter as compared to an analog voltmeter?

- A. Better for measuring computer circuits
- B. Better for RF measurements
- C. Better precision for most uses
- D. Faster response

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G4B08 (A)

Which of the following instruments may be used to monitor relative RF output when making antenna and transmitter adjustments?

- A. A field strength meter
- B. An antenna noise bridge
- C. A multimeter
- D. A Q meter

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G4B09 (B)

Which of the following can be determined with a field strength meter?

- A. The radiation resistance of an antenna
- B. The radiation pattern of an antenna
- C. The presence and amount of phase distortion of a transmitter
- D. The presence and amount of amplitude distortion of a transmitter

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G4B10 (A)

Which of the following can be determined with a directional wattmeter?

- A. Standing wave ratio
- B. Antenna front-to-back ratio
- C. RF interference
- D. Radio wave propagation

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G4B11 (C)

Which of the following must be connected to an antenna analyzer when it is being used for SWR measurements?

- A. Receiver
- B. Transmitter
- C. Antenna and feed line
- D. All of these choices are correct

~~

G4B12 (B)

What problem can occur when making measurements on an antenna system with an antenna analyzer?

- A. Permanent damage to the analyzer may occur if it is operated into a high SWR
- B. Strong signals from nearby transmitters can affect the accuracy of measurements
- C. The analyzer can be damaged if measurements outside the ham bands are attempted
- D. Connecting the analyzer to an antenna can cause it to absorb harmonics

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G4B13 (C)

What is a use for an antenna analyzer other than measuring the SWR of an antenna system?

- A. Measuring the front to back ratio of an antenna
- B. Measuring the turns ratio of a power transformer
- C. Determining the impedance of an unknown or unmarked coaxial cable
- D. Determining the gain of a directional antenna

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G4B14 (D)

What is an instance in which the use of an instrument with analog readout may be preferred over an instrument with a digital readout?

- A. When testing logic circuits
- B. When high precision is desired
- C. When measuring the frequency of an oscillator
- D. When adjusting tuned circuits

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G4E08 (A)

What is the name of the process by which sunlight is changed directly into electricity?

- A. Photovoltaic conversion
- B. Photon emission
- C. Photosynthesis
- D. Photon decomposition

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G4E09 (B)

What is the approximate open-circuit voltage from a fully illuminated silicon photovoltaic cell?

- A. 0.02 VDC
- B. 0.5 VDC
- C. 0.2 VDC
- D. 1.38 VDC

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G4E10 (B)

What is the reason that a series diode is connected between a solar panel and a storage battery that is being charged by the panel?

- A. The diode serves to regulate the charging voltage to prevent overcharge
- B. The diode prevents self-discharge of the battery though the panel during times of low or no illumination
- C. The diode limits the current flowing from the panel to a safe value
- D. The diode greatly increases the efficiency during times of high illumination

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G4E11 (C)

Which of the following is a disadvantage of using wind as the primary source of power for an emergency station?

- A. The conversion efficiency from mechanical energy to electrical energy is less than 2 percent
- B. The voltage and current ratings of such systems are not compatible with amateur equipment
- C. A large energy storage system is needed to supply power when the wind is not blowing
- D. All of these choices are correct

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SUBELEMENT G5 - ELECTRICAL PRINCIPLES [3 Exam Questions - 3 Groups]

G5A - Reactance; inductance; capacitance; impedance; impedance matching

G5A01 (C)

What is impedance?

- A. The electric charge stored by a capacitor
- B. The inverse of resistance
- C. The opposition to the flow of current in an AC circuit
- D. The force of repulsion between two similar electric fields

~~

G5A02 (B)

What is reactance?

- A. Opposition to the flow of direct current caused by resistance
- B. Opposition to the flow of alternating current caused by capacitance or inductance
- C. A property of ideal resistors in AC circuits
- D. A large spark produced at switch contacts when an inductor is de-energized

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G5A03 (D)

Which of the following causes opposition to the flow of alternating current in an inductor?

- A. Conductance
- B. Reluctance
- C. Admittance
- D. Reactance

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G5A04 (C)

Which of the following causes opposition to the flow of alternating current in a capacitor?

- A. Conductance
- B. Reluctance
- C. Reactance
- D. Admittance

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G5A05 (D)

How does an inductor react to AC?

- A. As the frequency of the applied AC increases, the reactance decreases
- 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 increases

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G5A06 (A)

How does a capacitor react to AC?

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

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G5A07 (D)

What happens when the impedance of an electrical load is equal to the output impedance of a power source, assuming both impedances are resistive?

- A. The source delivers minimum power to the load
- B. The electrical load is shorted
- C. No current can flow through the circuit
- D. The source can deliver maximum power to the load

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G5A08 (A)

Why is impedance matching important?

- A. So the source can deliver maximum power to the load
- B. So the load will draw minimum power from the source
- C. To ensure that there is less resistance than reactance in the circuit
- D. To ensure that the resistance and reactance in the circuit are equal

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G5A09 (B)

What unit is used to measure reactance?

- A. Farad
- B. Ohm
- C. Ampere
- D. Siemens

~~

G5A10 (B)

What unit is used to measure impedance?

- A. Volt
- B. Ohm
- C. Ampere
- D. Watt

~~

G5A11 (A)

Which of the following describes one method of impedance matching between two AC circuits?

- A. Insert an LC network between the two circuits
- B. Reduce the power output of the first circuit
- C. Increase the power output of the first circuit
- D. Insert a circulator between the two circuits

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G5A12 (B)

What is one reason to use an impedance matching transformer?

- A. To minimize transmitter power output
- B. To maximize the transfer of power
- C. To reduce power supply ripple
- D. To minimize radiation resistance

~~

G5A13 (D)

Which of the following devices can be used for impedance matching at radio frequencies?

- A. A transformer
- B. A Pi-network
- C. A length of transmission line
- D. All of these choices are correct

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G5B - The Decibel; current and voltage dividers; electrical power calculations; sine wave root-mean-square (RMS) values; PEP calculations

G5B01 (B)

What dB change represents a two-times increase or decrease in power?

- A. Approximately 2 dB
- B. Approximately 3 dB
- C. Approximately 6 dB
- D. Approximately 12 dB

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G5B02 (C)

How does the total current relate to the individual currents in each branch of a purely resistive parallel circuit?

- A. It equals the average of each branch current
- B. It decreases as more parallel branches are added to the circuit
- C. It equals the sum of the currents through each branch
- D. It is the sum of the reciprocal of each individual voltage drop

~~

G5B03 (B)

How many watts of electrical power are used if 400 VDC is supplied to an 800 ohm load?

- A. 0.5 watts
- B. 200 watts
- C. 400 watts
- D. 3200 watts

~~

G5B04 (A)

How many watts of electrical power are used by a 12 VDC light bulb that draws 0.2 amperes?

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

~~

G5B05 (A)

How many watts are dissipated when a current of 7.0 milliamperes flows through 1.25 kilohms resistance?

- A. Approximately 61 milliwatts
- B. Approximately 61 watts
- C. Approximately 11 milliwatts
- D. Approximately 11 watts

~~

G5B06 (B)

What is the output PEP from a transmitter if an oscilloscope measures 200 volts peak-to-peak across a 50 ohm dummy load connected to the transmitter output?

- A. 1.4 watts
- B. 100 watts
- C. 353.5 watts
- D. 400 watts

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G5B07 (C)

What value of an AC signal produces the same power dissipation in a resistor as a DC voltage of the same value?

- A. The peak-to-peak value
- B. The peak value
- C. The RMS value
- D. The reciprocal of the RMS value

~~

G5B09 (B)

What is the RMS voltage of a sine wave with a value of 17 volts peak?

- A. 8.5 volts
- B. 12 volts
- C. 24 volts
- D. 34 volts

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G5B10 (C)

What percentage of power loss would result from a transmission line loss of 1 dB?

- A. 10.9 percent
- B. 12.2 percent
- C. 20.5 percent
- D. 25.9 percent

~~

G5B11 (B)

What is the ratio of peak envelope power to average power for an unmodulated carrier?

- A. 0.707
- B. 1.00
- C. 1.414
- D. 2.00

~~

G5B12 (B)

What would be the RMS voltage across a 50 ohm dummy load dissipating 1200 watts?

- A. 173 volts
- B. 245 volts
- C. 346 volts
- D. 692 volts

~~

G5B13 (B)

What is the output PEP of an unmodulated carrier if an average reading wattmeter connected to the transmitter output indicates 1060 watts?

- A. 530 watts
- B. 1060 watts
- C. 1500 watts
- D. 2120 watts

~~

G5B14 (B)

What is the output PEP from a transmitter if an oscilloscope measures 500 volts peak-to-peak across a 50 ohm resistive load connected to the transmitter output?

- A. 8.75 watts
- B. 625 watts
- C. 2500 watts
- D. 5000 watts

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G5C - Resistors, capacitors, and inductors in series and parallel;
transformers

G5C01 (C)

What causes a voltage to appear across the secondary winding of a transformer when an AC voltage source is connected across its primary winding?

- A. Capacitive coupling
- B. Displacement current coupling
- C. Mutual inductance
- D. Mutual capacitance

~~

G5C02 (A)

What happens if you reverse the primary and secondary windings of a 4:1 voltage step down transformer?

- A. The secondary voltage becomes 4 times the primary voltage
- B. The transformer no longer functions as it is a unidirectional device
- C. Additional resistance must be added in series with the primary to prevent overload
- D. Additional resistance must be added in parallel with the secondary to prevent overload

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G5C03 (B)

Which of the following components should be added to an existing resistor to increase the resistance?

- A. A resistor in parallel
- B. A resistor in series
- C. A capacitor in series
- D. A capacitor in parallel

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G5C04 (C)

What is the total resistance of three 100 ohm resistors in parallel?

- A. 0.30 ohms
- B. 0.33 ohms
- C. 33.3 ohms
- D. 300 ohms

~~

General Chapter 4, Components and Circuits

G5C05 (C)

If three equal value resistors in series produce 450 ohms, what is the value of each resistor?

- A. 1500 ohms
- B. 90 ohms
- C. 150 ohms
- D. 175 ohms

~~

G5C06 (C)

What is the RMS voltage across a 500-turn secondary winding in a transformer if the 2250-turn primary is connected to 120 VAC?

- A. 2370 volts
- B. 540 volts
- C. 26.7 volts
- D. 5.9 volts

~~

G5C07 (A)

What is the turns ratio of a transformer used to match an audio amplifier having 600 ohm output impedance to a speaker having 4 ohm impedance?

- A. 12.2 to 1
- B. 24.4 to 1
- C. 150 to 1
- D. 300 to 1

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G5C08 (D)

What is the equivalent capacitance of two 5.0 nanofarad capacitors and one 750 picofarad capacitor connected in parallel?

- A. 576.9 nanofarads
- B. 1733 picofarads
- C. 3583 picofarads
- D. 10.750 nanofarads

~~

G5C09 (C)

What is the capacitance of three 100 microfarad capacitors connected in series?

- A. 0.30 microfarads
- B. 0.33 microfarads
- C. 33.3 microfarads
- D. 300 microfarads

~~

G5C10 (C)

What is the inductance of three 10 millihenry inductors connected in parallel?

- A. 0.30 henrys
- B. 3.3 henrys
- C. 3.3 millihenrys
- D. 30 millihenrys

~~

G5C11 (C)

What is the inductance of a 20 millihenry inductor connected in series with a 50 millihenry inductor?

- A. 0.07 millihenrys
- B. 14.3 millihenrys
- C. 70 millihenrys
- D. 1000 millihenrys

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G5C12 (B)

What is the capacitance of a 20 microfarad capacitor connected in series with a 50 microfarad capacitor?

- A. 0.07 microfarads
- B. 14.3 microfarads
- C. 70 microfarads
- D. 1000 microfarads

~~

G5C13 (C)

Which of the following components should be added to a capacitor to increase the capacitance?

- A. An inductor in series
- B. A resistor in series
- C. A capacitor in parallel
- D. A capacitor in series

~~

G5C14 (D)

Which of the following components should be added to an inductor to increase the inductance?

- A. A capacitor in series
- B. A resistor in parallel
- C. An inductor in parallel
- D. An inductor in series

~~

G5C15 (A)

What is the total resistance of a 10 ohm, a 20 ohm, and a 50 ohm resistor connected in parallel?

- A. 5.9 ohms
- B. 0.17 ohms
- C. 10000 ohms
- D. 80 ohms

~~

G5C16 (B)

Why is the conductor of the primary winding of many voltage step up transformers larger in diameter than the conductor of the secondary winding?

- A. To improve the coupling between the primary and secondary
- B. To accommodate the higher current of the primary
- C. To prevent parasitic oscillations due to resistive losses in the primary
- D. To insure that the volume of the primary winding is equal to the volume of the secondary winding

~~

General Chapter 4, Components and Circuits

G5C17 (C)

What is the value in nanofarads (nF) of a 22,000 pF capacitor?

- A. 0.22 nF
- B. 2.2 nF
- C. 22 nF
- D. 220 nF

~~

G5C18 (D)

What is the value in microfarads of a 4700 nanofarad (nF) capacitor?

- A. 47 μ F
- B. 0.47 μ F
- C. 47,000 μ F
- D. 4.7 μ F

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SUBELEMENT G6 - CIRCUIT COMPONENTS [2 Exam Questions - 2 Groups]

G6A - Resistors; Capacitors; Inductors; Rectifiers; solid state diodes and transistors; vacuum tubes; batteries

G6A01 (C)

What is the minimum allowable discharge voltage for maximum life of a standard 12 volt lead acid battery?

- A. 6 volts
- B. 8.5 volts
- C. 10.5 volts
- D. 12 volts

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G6A02 (B)

What is an advantage of the low internal resistance of nickel-cadmium batteries?

- A. Long life
- B. High discharge current
- C. High voltage
- D. Rapid recharge

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G6A03 (B)

What is the approximate junction threshold voltage of a germanium diode?

- A. 0.1 volt
- B. 0.3 volts
- C. 0.7 volts
- D. 1.0 volts

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G6A04 (D)

When is it acceptable to recharge a carbon-zinc primary cell?

- A. As long as the voltage has not been allowed to drop below 1.0 volt
- B. When the cell is kept warm during the recharging period
- C. When a constant current charger is used
- D. Never

~~

G6A05 (C)

What is the approximate junction threshold voltage of a conventional silicon diode?

- A. 0.1 volt
- B. 0.3 volts
- C. 0.7 volts
- D. 1.0 volts

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G6A06 (A)

Which of the following is an advantage of using a Schottky diode in an RF switching circuit rather than a standard silicon diode?

- A. Lower capacitance
- B. Lower inductance
- C. Longer switching times
- D. Higher breakdown voltage

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G6A07 (A)

What are the stable operating points for a bipolar transistor used as a switch in a logic circuit?

- A. Its saturation and cutoff regions
- B. Its active region (between the cutoff and saturation regions)
- C. Its peak and valley current points
- D. Its enhancement and depletion modes

~~

G6A08 (D)

Why must the cases of some large power transistors be insulated from ground?

- A. To increase the beta of the transistor
- B. To improve the power dissipation capability
- C. To reduce stray capacitance
- D. To avoid shorting the collector or drain voltage to ground

~~

G6A09 (B)

Which of the following describes the construction of a MOSFET?

- A. The gate is formed by a back-biased junction
- B. The gate is separated from the channel with a thin insulating layer
- C. The source is separated from the drain by a thin insulating layer
- D. The source is formed by depositing metal on silicon

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G6A10 (A)

Which element of a triode vacuum tube is used to regulate the flow of electrons between cathode and plate?

- A. Control grid
- B. Heater
- C. Screen Grid
- D. Trigger electrode

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G6A11 (B)

Which of the following solid state devices is most like a vacuum tube in its general operating characteristics?

- A. A bipolar transistor
- B. A field effect transistor
- C. A tunnel diode
- D. A varistor

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G6A12 (A)

What is the primary purpose of a screen grid in a vacuum tube?

- A. To reduce grid-to-plate capacitance
- B. To increase efficiency
- C. To increase the control grid resistance
- D. To decrease plate resistance

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G6A13 (D)

Why is the polarity of applied voltages important for polarized capacitors?

- A. Incorrect polarity can cause the capacitor to short-circuit
- B. Reverse voltages can destroy the dielectric layer of an electrolytic capacitor
- C. The capacitor could overheat and explode
- D. All of these choices are correct

~~

G6A14 (D)

Which of the following is an advantage of ceramic capacitors as compared to other types of capacitors?

- A. Tight tolerance
- B. High stability
- C. High capacitance for given volume
- D. Comparatively low cost

~~

G6A15 (C)

Which of the following is an advantage of an electrolytic capacitor?

- A. Tight tolerance
- B. Much less leakage than any other type
- C. High capacitance for a given volume
- D. Inexpensive RF capacitor

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G6A16 (C)

What will happen to the resistance if the temperature of a resistor is increased?

- A. It will change depending on the resistor's reactance coefficient
- B. It will stay the same
- C. It will change depending on the resistor's temperature coefficient
- D. It will become time dependent

~~

G6A17 (B)

Which of the following is a reason not to use wire-wound resistors in an RF circuit?

- A. The resistor's tolerance value would not be adequate for such a circuit
- B. The resistor's inductance could make circuit performance unpredictable
- C. The resistor could overheat
- D. The resistor's internal capacitance would detune the circuit

~~

G6A18 (D)

What is an advantage of using a ferrite core toroidal inductor?

- A. Large values of inductance may be obtained
- B. The magnetic properties of the core may be optimized for a specific range of frequencies
- C. Most of the magnetic field is contained in the core
- D. All of these choices are correct

~~

G6A19 (C)

How should the winding axes of two solenoid inductors be oriented to minimize their mutual inductance?

- A. In line
- B. Parallel to each other
- C. At right angles to each other
- D. Interleaved

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G6B - Analog and digital integrated circuits (ICs); microprocessors; memory; I/O devices; microwave ICs (MMICs); display devices

G6B01 (D)

Which of the following is an analog integrated circuit?

- A. NAND Gate
- B. Microprocessor
- C. Frequency Counter
- D. Linear voltage regulator

~~

G6B02 (B)

What is meant by the term MMIC?

- A. Multi Megabyte Integrated Circuit
- B. Monolithic Microwave Integrated Circuit
- C. Military Manufactured Integrated Circuit
- D. Mode Modulated Integrated Circuit

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G6B03 (A)

Which of the following is an advantage of CMOS integrated circuits compared to TTL integrated circuits?

- A. Low power consumption
- B. High power handling capability
- C. Better suited for RF amplification
- D. Better suited for power supply regulation

~~

G6B04 (B)

What is meant by the term ROM?

- A. Resistor Operated Memory
- B. Read Only Memory
- C. Random Operational Memory
- D. Resistant to Overload Memory

~~

G6B05 (C)

What is meant when memory is characterized as non-volatile?

- A. It is resistant to radiation damage
- B. It is resistant to high temperatures
- C. The stored information is maintained even if power is removed
- D. The stored information cannot be changed once written

~~

G6B06 (D)

What kind of device is an integrated circuit operational amplifier?

- A. Digital
- B. MMIC
- C. Programmable Logic
- D. Analog

~~

G6B07 (D)

Which of the following is an advantage of an LED indicator compared to an incandescent indicator?

- A. Lower power consumption
- B. Faster response time
- C. Longer life
- D. All of these choices are correct

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G6B08 (D)

How is an LED biased when emitting light?

- A. Beyond cutoff
- B. At the Zener voltage
- C. Reverse Biased
- D. Forward Biased

~~

G6B09 (A)

Which of the following is a characteristic of a liquid crystal display?

- A. It requires ambient or back lighting
- B. It offers a wide dynamic range
- C. It has a wide viewing angle
- D. All of these choices are correct

~~

G6B10 (A)

What two devices in an Amateur Radio station might be connected using a USB interface?

- A. Computer and transceiver
- B. Microphone and transceiver
- C. Amplifier and antenna
- D. Power supply and amplifier

~~

G6B11 (B)

What is a microprocessor?

- A. A low power analog signal processor used as a microwave detector
- B. A computer on a single integrated circuit
- C. A microwave detector, amplifier, and local oscillator on a single integrated circuit
- D. A low voltage amplifier used in a microwave transmitter modulator stage

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G6B12 (D)

Which of the following connectors would be a good choice for a serial data port?

- A. PL-259
- B. Type N
- C. Type SMA
- D. DE-9

~~

G6B13 (C)

Which of these connector types is commonly used for RF connections at frequencies up to 150 MHz?

- A. Octal
- B. RJ-11
- C. PL-259
- D. DB-25

~~

G6B14 (C)

Which of these connector types is commonly used for audio signals in Amateur Radio stations?

- A. PL-259
- B. BNC
- C. RCA Phono
- D. Type N

~~

G6B15 (B)

What is the main reason to use keyed connectors instead of non-keyed types?

- A. Prevention of use by unauthorized persons
- B. Reduced chance of incorrect mating
- C. Higher current carrying capacity
- D. All of these choices are correct

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G6B16 (A)

Which of the following describes a type N connector?

- A. A moisture-resistant RF connector useful to 10 GHz
- B. A small bayonet connector used for data circuits
- C. A threaded connector used for hydraulic systems
- D. An audio connector used in surround-sound installations

~~

General Chapter 4, Components and Circuits

G6B17 (C)

What is the general description of a DIN type connector?

- A. A special connector for microwave interfacing
- B. A DC power connector rated for currents between 30 and 50 amperes
- C. A family of multiple circuit connectors suitable for audio and control signals
- D. A special watertight connector for use in marine applications

~~

G6B18 (B)

What is a type SMA connector?

- A. A large bayonet connector usable at power levels in excess of 1 KW
- B. A small threaded connector suitable for signals up to several GHz
- C. A connector designed for serial multiple access signals
- D. A type of push-on connector intended for high voltage applications

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G7 - PRACTICAL CIRCUITS [3 Exam Questions - 3 Groups]

G7A Power supplies; and schematic symbols

G7A01 (B)

What useful feature does a power supply bleeder resistor provide?

- A. It acts as a fuse for excess voltage
- B. It ensures that the filter capacitors are discharged when power is removed
- C. It removes shock hazards from the induction coils
- D. It eliminates ground loop current

~~

G7A02 (D)

Which of the following components are used in a power supply filter network?

- A. Diodes
- B. Transformers and transducers
- C. Quartz crystals
- D. Capacitors and inductors

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G7A03 (D)

What is the peak-inverse-voltage across the rectifiers in a full-wave bridge power supply?

- A. One-quarter the normal output voltage of the power supply
- B. Half the normal output voltage of the power supply
- C. Double the normal peak output voltage of the power supply
- D. Equal to the normal peak output voltage of the power supply

~~

G7A04 (D)

What is the peak-inverse-voltage across the rectifier in a half-wave power supply?

- A. One-half the normal peak output voltage of the power supply
- B. One-half the normal output voltage of the power supply
- C. Equal to the normal output voltage of the power supply
- D. Two times the normal peak output voltage of the power supply

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G7A05 (B)

What portion of the AC cycle is converted to DC by a half-wave rectifier?

- A. 90 degrees
- B. 180 degrees
- C. 270 degrees
- D. 360 degrees

~~

G7A06 (D)

What portion of the AC cycle is converted to DC by a full-wave rectifier?

- A. 90 degrees
- B. 180 degrees
- C. 270 degrees
- D. 360 degrees

~~

G7A07 (A)

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

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

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G7A08 (C)

Which of the following is an advantage of a switchmode power supply as compared to a linear power supply?

- A. Faster switching time makes higher output voltage possible
- B. Fewer circuit components are required
- C. High frequency operation allows the use of smaller components
- D. All of these choices are correct

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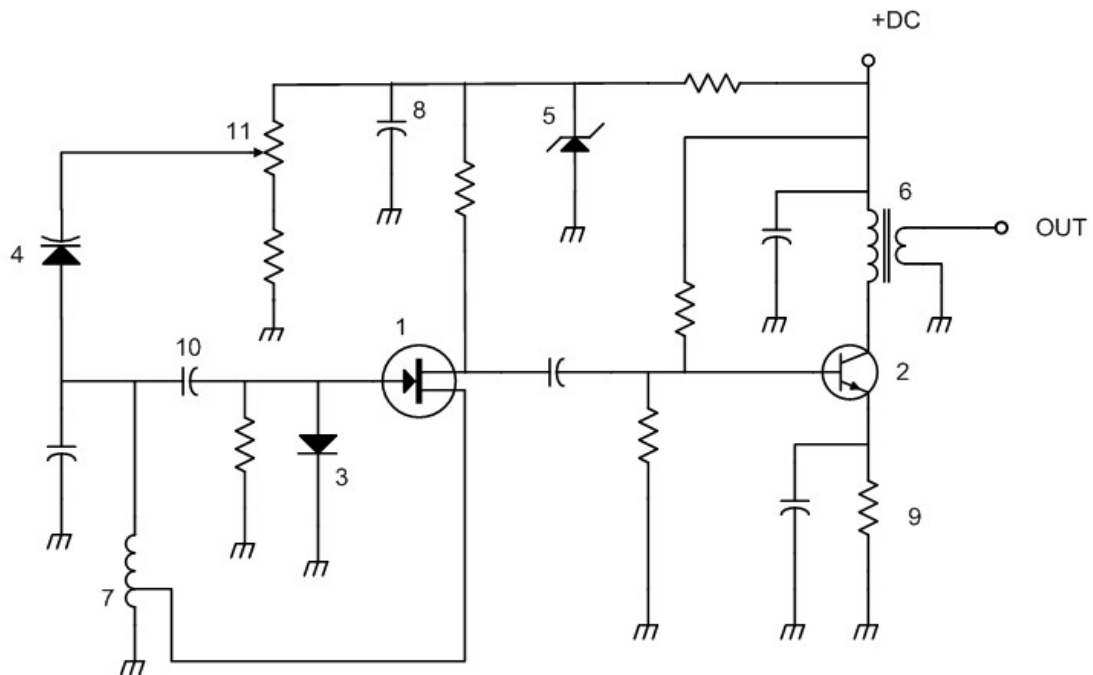


Figure G7-1

G7A09 (C)

Which symbol in figure G7-1 represents a field effect transistor?

- A. Symbol 2
- B. Symbol 5
- C. Symbol 1
- D. Symbol 4

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G7A10 (D)

Which symbol in figure G7-1 represents a Zener diode?

- A. Symbol 4
- B. Symbol 1
- C. Symbol 11
- D. Symbol 5

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G7A11 (B)

Which symbol in figure G7-1 represents an NPN junction transistor?

- A. Symbol 1
- B. Symbol 2
- C. Symbol 7
- D. Symbol 11

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G7A12 (C)

Which symbol in Figure G7-1 represents a multiple-winding transformer?

- A. Symbol 4
- B. Symbol 7
- C. Symbol 6
- D. Symbol 1

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G7A13 (A)

Which symbol in Figure G7-1 represents a tapped inductor?

- A. Symbol 7
- B. Symbol 11
- C. Symbol 6
- D. Symbol 1

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G7B - Digital circuits; amplifiers and oscillators

G7B01 (A)

Complex digital circuitry can often be replaced by what type of integrated circuit?

- A. Microcontroller
- B. Charge-coupled device
- C. Phase detector
- D. Window comparator

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G7B02 (A)

Which of the following is an advantage of using the binary system when processing digital signals?

- A. Binary "ones" and "zeros" are easy to represent by an "on" or "off" state
- B. The binary number system is most accurate
- C. Binary numbers are more compatible with analog circuitry
- D. All of these choices are correct

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G7B03 (B)

Which of the following describes the function of a two input AND gate?

- A. Output is high when either or both inputs are low
- B. Output is high only when both inputs are high
- C. Output is low when either or both inputs are high
- D. Output is low only when both inputs are high

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G7B04 (C)

Which of the following describes the function of a two input NOR gate?

- A. Output is high when either or both inputs are low
- B. Output is high only when both inputs are high
- C. Output is low when either or both inputs are high
- D. Output is low only when both inputs are high

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G7B05 (C)

How many states does a 3-bit binary counter have?

- A. 3
 - B. 6
 - C. 8
 - D. 16
- ~~

G7B06 (A)

What is a shift register?

- A. A clocked array of circuits that passes data in steps along the array
 - B. An array of operational amplifiers used for tri-state arithmetic operations
 - C. A digital mixer
 - D. An analog mixer
- ~~