General Class Study Group Chapter 5
Electrical Principles

Two questions from this chapter will be on the test.

Manual pages 1 to 8

G5B02
1. In a parallel circuit with a voltage source and several branch resistors, how is the total current related to the current in the branch resistors?
A. It equals the average of the branch current through each resistor
B. It equals the sum of the branch current through each resistor
C. It decreases as more parallel resistors are added to the circuit
D. It is the sum of each resistor's voltage drop multiplied by the total number of resistors

G5B15
2. If three equal resistors in parallel produce 50-ohms of resistance and the same 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

Manual pages 8 to 10

G5B03
3. 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. 320,000 watts

G5B04
4. How many watts of electrical power are used by a 12-VDC light bulb that draws 0.2 amperes?
A. 60 watts
B. 24 watts
C. 6 watts
D. 2.4 watts

G5B05
5. How many watts are being dissipated when 7.0 milliamperes flow through 1.25 kilohms?
A. Approximately 61 milliwatts
B. Approximately 39 milliwatts
C. Approximately 11 milliwatts
D. Approximately 9 milliwatts

Manual pages 10 to 13

G5B01
6. A two-times increase in power results in a change of how many dB?
A. 1 dB higher
B. 3 dB higher
C. 6 dB higher
D. 12 dB higher

G5B14
7. What percentage loss would result from a transmission line loss of 1 dB?
A. 16.6%
B. 12.5%
C. 14.7%
D. 20.6%

Manual pages 13 to 17

G5B08
8. A DC voltage equal to what value of an applied sine-wave AC voltage would produce the same amount of heat over time in a resistive element?
A. The peak-to-peak value
B. The RMS value
C. The average value
D. The peak value

G5B09
9. What is the peak-to-peak voltage of a sine wave that has an RMS voltage of 120 volts?
A. 84.8 volts
B. 169.7 volts
C. 204.8 volts
D. 339.4 volts

G5B10
10. A sine wave of 17 volts peak is equivalent to how many volts RMS?
A. 8.5 volts
B. 12 volts
C. 24 volts
D. 34 volts

Manual pages 17 to 20

G5A01
11. What is impedance?
A. The electric charge stored by a capacitor
B. The opposition to the flow of AC in a circuit containing only capacitance
C. The opposition to the flow of AC in a circuit
D. The force of repulsion between one electric field and another with the same charge

G5A02
12. What is reactance?
A. Opposition to DC caused by resistors
B. Opposition to AC caused by inductors and capacitors
C. A property of ideal resistors in AC circuits
D. A large spark produced at switch contacts when an inductor is deenergized

G5A03
13.In an inductor, what causes opposition to the flow of AC?
A. Resistance
B. Reluctance
C. Admittance
D. Reactance

G5A04
14. In a capacitor, what causes opposition to the flow of AC?
A. Resistance
B. Reluctance
C. Reactance
D. Admittance

G5A05
15. How does a coil 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

G5A06
16. 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

G5A07
17. What happens when the impedance of an electrical load is equal to the internal impedance of the power source?
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 delivers maximum power to the load

G5A08
18. 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

G5A09
19. What unit is used to measure reactance?
A. Mho
B. Ohm
C. Ampere
D. Siemens

G5A10
20. What unit is used to measure impedance?
A. Volt
B. Ohm
C. Ampere
D. Watt

G5B13
21. What would be the capacitance and voltage rating of a series circuit consisting of two equal value capacitors with equal voltage ratings?
A. Total capacitance would be half that of each capacitor and maximum voltage would be twice that of each capacitor
B. Total capacitance would be half that of each capacitor and maximum voltage would be the same as each capacitor
C. Total capacitance and maximum voltage would be the same as each capacitor
D. Total capacitance and maximum voltage would be half that of each capacitor

Manual pages 20 to 22

G5A11
22. Why should core saturation of a conventional impedance matching transformer be avoided?
A. Harmonics and distortion could result from saturation
B. Magnetic flux would increase with frequency
C. RF susceptance would increase
D. Temporary changes of the core permeability could result from saturation

G5B06
23. What is the 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

G5B07
24. What is the turns ratio of a transformer to match an audio amplifier having a 600-ohm output impedance to a speaker having a 4-ohm impedance?
A. 12.2 to 1
B. 24.4 to 1
C. 150 to 1
D. 300 to 1

G5B12

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

A. Capacitive coupling

B. Displacement current coupling

C. Mutual inductance

D. Mutual capacitance