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Please submit this page with your answer and question sheets

Must circle the correct answer on the answer sheet.

1. A B C D	**10. A B C D**	**19. A B C D**
2. A B C D	**11. A B C D**	**20. A B C D**
3. A B C D	**12. A B C D**	**21. A B C D**
4. A B C D	**13. A B C D**	**22. A B C D**
5. A B C D	**14. A B C D**	**23. A B C D**
6. A B C D	**15. A B C D**	**24. A B C D**
7. A B C D	**16. A B C D**	**25. A B C D**
8. A B C D	**17. A B C D**	**26. A B C D**
9. A B C D	**18. A B C D**	

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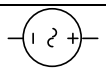
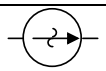
1. Which of the following is AC voltage source?

A	
B	
C	
D	

2. Capacitor is measured in

A	Watts
B	Ohms
C	Farads
D	Henries

3. What is 1,780.5 kJ in engineering notation?

A	1.7805×10^6 J
B	1.7805×10^4 J
C	1780.5×10^3 J
D	1.7805 MJ

4. Thevenin's Theorem can be applied only to:

A	Resistive circuits
B	Capacitive circuits
C	Inductive Circuits
D	All of the above

5. Based on 4 band resistor color chart, find the **value and tolerance** in which a resistor has the following color bands to satisfy the manufacturer's tolerance

1st band	2nd band	3rd band	4th band
red	brown	yellow	gold

A	214k Ohm ±5%
B	120k Ohm x 5%
C	210k Ohm ±5%
D	2100 Ohm x5%

4 band resistor color chart

color	Band value	tolerance
Black	0	
Brown	1	1%
Red	2	2%
Orange	3	3%
Yellow	4	4%
Green	5	0.5%
Blue	6	0.25%
Gold		5%
Silver		10%

6. A student measures resistance with a Digital Mutimeter (Volt/Amp/Ohm Meter). He places this Mutimeter on an ohmmeter setting x200kΩ. Then he takes a resistor with the following color bands:

1st band	2nd band	3rd band	4th band
brown	black	yellow	gold

Which value is correct for his Ohmmeter reading to satisfy the manufacturer's tolerance? In your test procedure, show your work how you decide the correct answer (refer to **4 band resistor color chart above)**

A	200 kΩ
B	98.2 kΩ
C	92.5 kΩ
D	109 kΩ

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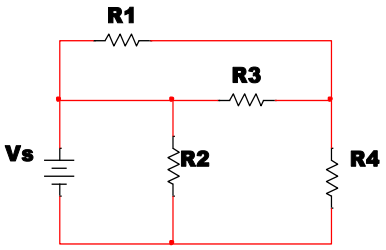
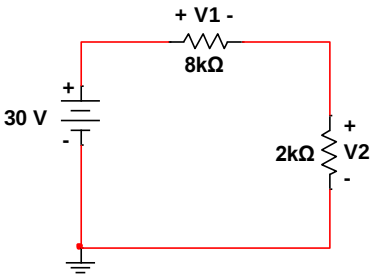
7. Resistors of $R1$ = 10kΩ, $R2$ = 1kΩ, $R3$ = 1kΩ, $R4$ = 10kΩ are connected in combinational circuit to a 12-Volt supply Vs. Choose correct answer.

A	R1 is in series with R4
B	R1 is in parallel with R2
C	R1 is in series with R3
D	R1 is in parallel with R3



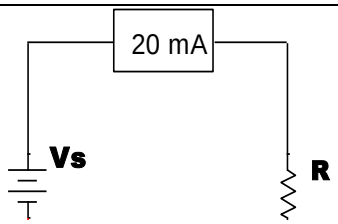
8. Find the voltage V_1 for the network below

A	2V
B	4V
C	6V
D	24V



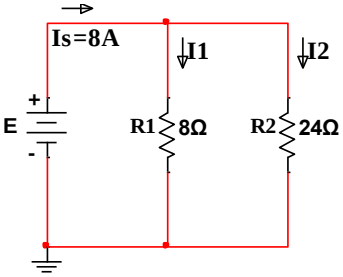
9. How much resistance is needed to limit the current from a *Vs*= 110V source to 20mA?

A	5.5kΩ
B	550Ω
C	55 kΩ
D	550 kΩ



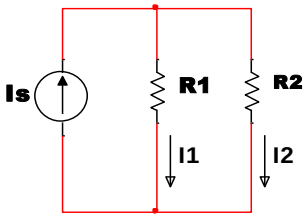
10. Determine current I_1 for the circuit below

A	1 A
B	2 A
C	4 A
D	6 A



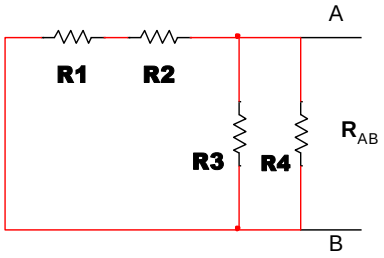
11. *Is* = 3.5 mA. You measured *I*2 to be 1 mA. What is current *I*1?

A	1.5 mA
B	2.0m A
C	2.5mA
D	6 A

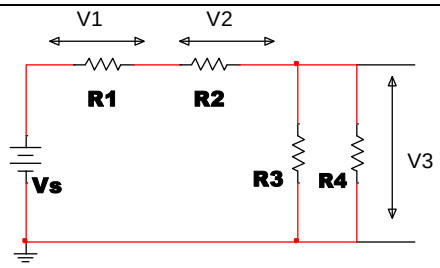


12. For the network, $R1$ = 3.0 kΩ, $R2$ = 3.0 kΩ, $R3$ = 6.0 kΩ, $R4$ = 6.0 kΩ. What is the total resistance R_{AB} between *A* and *B*?

A	2.0 kΩ
B	9.0 kΩ
C	1.5 kΩ
D	3.0kΩ



13. A voltage source *Vs*= 6.0V, two resistors are equal $R1 = R2$, $R3 = R4$, and the voltage between A and B (*V*3 across *R*3 and *R*4) is 2.2V. What are the voltage *V1* and *V2*?



A	V1=3.8V, V2=3.8V
B	V1=1.1V, V2=1.1V
C	V1=1.9V, V2=3.8V
D	V1=1.9V, V2=1.9V

Show your work here

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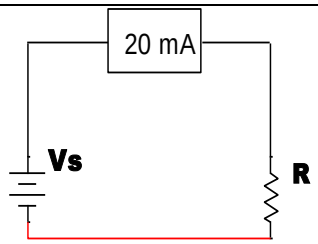
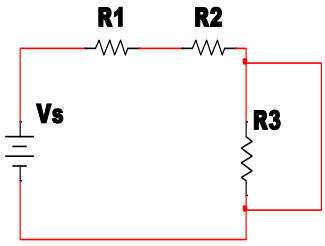
14. Assume a resistor R is rated for 2W (2 Watts). What is the maximum voltage can be applied to the resister R to without exceeding its power rating.

A	110V
B	220 V
C	100 V
D	40 V



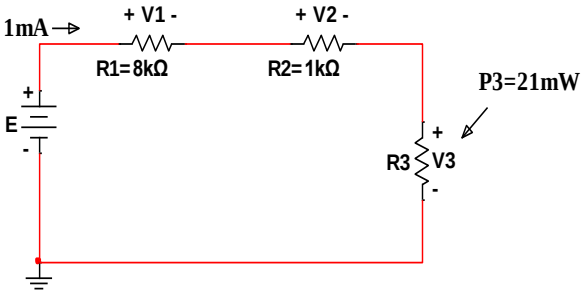
15. Three equal resistors of 1000 ohms each ($R1 = R2 = R3$) are connected in series to a Vs =60V power supply. If one of the resistors is shorted, the total resistance and current is:

A	3kΩ, 20 mA
B	1kΩ, 60 mA
C	2kΩ, 30 mA
D	1.5kΩ,40 mA



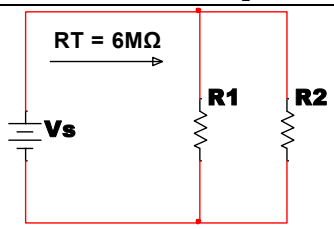
16. For the network below, what is the voltage source E that has to be applied to this circuit?

A	30 V
B	21 V
C	21 mV
D	30 mV



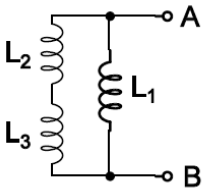
17. For the network below, R1=9MΩ,the total resistance (RT = R1//R2) is 6MΩ, and the power dissipated by R2 is 81kW. What is the resistance of R_2?

A	3 MΩ
B	6 MΩ
C	9 MΩ
D	18 MΩ



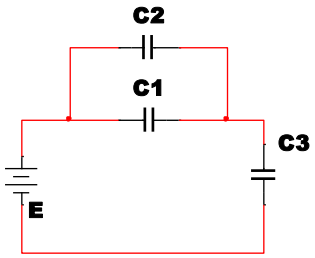
18. $L1$ = 4.0 mH, $L2$ = 2.0 mH, $L3$ =1.0 mH. What is the total inductance between A and B?

A	7.0 mH
B	1,7 mH
C	3.0 mH
D	4.7 mH



19. Three capacitors, namely C_1=3μF, C_2=2μF, and C_3= 20μF, are connected to E=50-volt supply. What is the voltage across 20μF capacitor C_3?

A	50 V
B	40 V
C	10 V
D	6.3 V



Show your work here.

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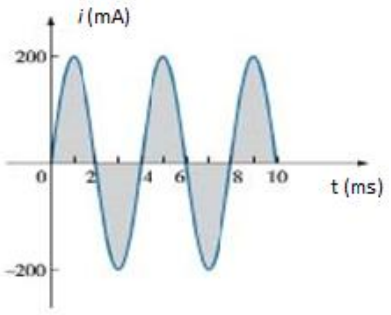
20. For the sinusoidal signal, the time period of the waveform is 4ms as shown in Figure, what is the frequency of the waveform?

A	0.25 kHz
B	1 kHz
C	4 kHz
D	10 kHz

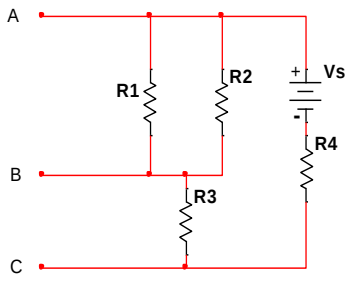


21. Given the AC current source in a circuit i(t) = 100 sin(120πt) (mA), where *t* is a time in the unit of *ms*. What is the amplitude of the AC current?

A	200mA
B	100mA
C	70.7mA
D	141.4mA

22. *R*1 = *R*2 = 2.0 kΩ, *R*3 = 1.5 kΩ, *R*4 = 2.5 kΩ, and *Vs*=10.0 V. What is the voltage V_{AC}?

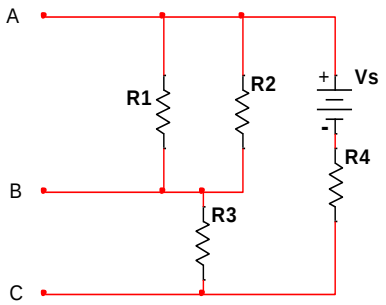
A	2.0V
B	5.0V
C	10V
D	2.5V



Show your work here. You can use a calculator.

23. *R*1 = *R*2 = 2.0 kΩ, *R*3 = 1.5 kΩ, *R*4 = 2.5 kΩ, and *Vs*=10.0 V. What is the current through *R*1?

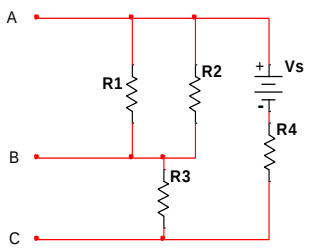
A	1.0 mA
B	5mA
C	2.0mA
D	4.0mA



Show your work here. You can use a calculator.

24. *R*1 = *R*2 = 2.2 kΩ, *R*3 = 1.4 kΩ, *R*4 = 3.5 kΩ, and *Vs*=6.0 V. How much power is dissipated by resistor *R*4?

A	1.4mW
B	3.5mW
C	1.1mW
D	2.2mW



Show your work here. You can use a calculator.

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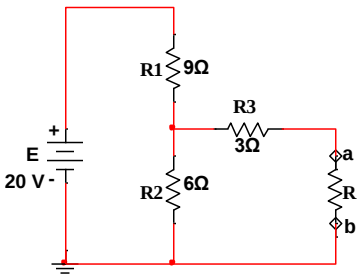
25. What is the Thevenin voltage $\mathbf{V_{th}}$ in the Thevenin equivalent circuit for the network external to the resistor ***R*** for the network below?

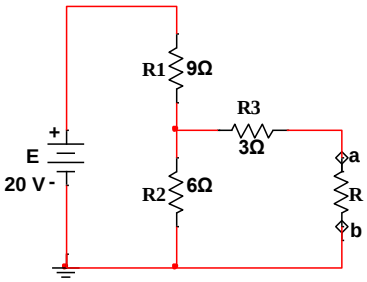
A.	5 V
B.	20 V
C	8 V
D.	6.75 V



Show your work here including Thevenin equivalent circuit. You can use a calculator.

26. What is the $\boldsymbol{R_{th}}$ in the Thevenin equivalent circuit for the network external to the resistor ***R*** for the network below?

A.	3.6 Ω
B.	6.6 Ω
C.	6.0 Ω
D.	9 Ω



Show your work here including Thevenin equivalent circuit. You can use a calculator.