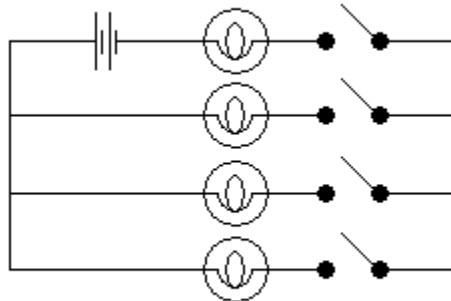1.

a).   What are the readings of ammeter 3 and ammeter 5?

b)   If the total resistance of the circuit is 0.100 Ω, find the voltage of the circuit.

2.

How many switches need to be closed to light up one bulb?

A) 1   B) 2   C) 3   D)4

b)   What kind of circuit will be created by closing that number of switches?

3.   Draw a circuit that would force the current to flow through every resistor.

4.   a)   Except for large appliances and heaters, most of your gadgets are connected to 120 V. How much **power in kW** is associated with a toaster drawing 8A?

b)   What does 8 A mean?

c)   What property of the toaster converts electrical energy into heat used to brown your toasts?

d)   How does the heat do work on the toast?

e)   What evidence is there for a chemical change as you toast your bread?

f)   Where does the heat go if a few minutes later, the buttered toast is cool to the touch? Give two destinations for the heat.

g)   If it took 3 minutes to brown the bread, how many J of energy were consumed by the toaster in that time period?

5.   What formula connects $P = VI$ to $P = I^2R$?

Voltage(volts)

A

B

C

Current Intensity (amps)
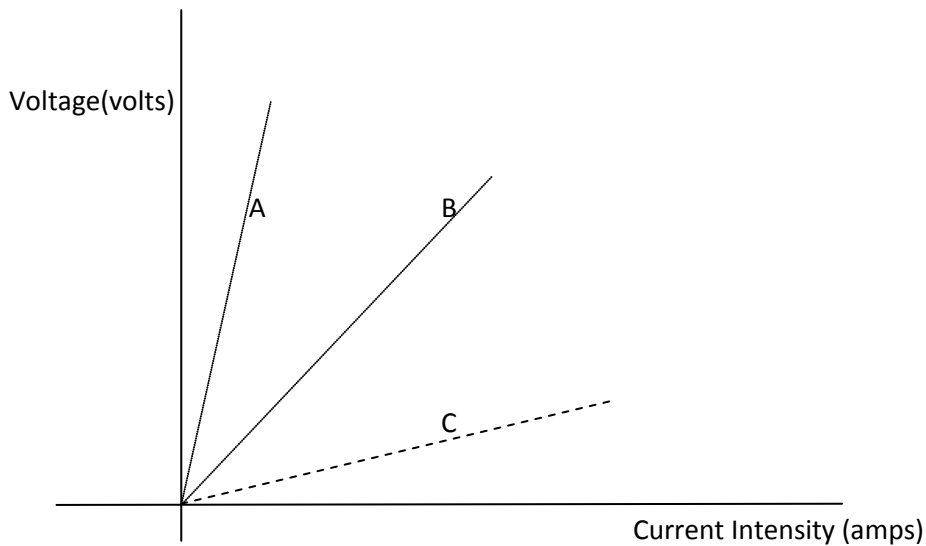
6.   In the above graph, which circuit has the highest resistance?
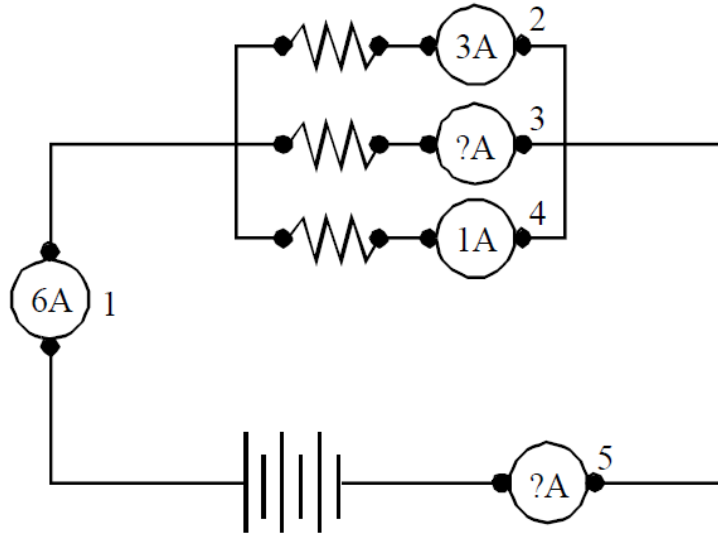
A)   A
B)   B
C)   C
D)   They all have the same resistance, just a different conductance.

7.   If the slope of A in the graph= 2/3, then what is the resistance of that circuit?

A) $1.5\,\Omega$
B) $1.5\,S$
C) $0.67\,\Omega$
D) $0.67\,S$

ANSWERS
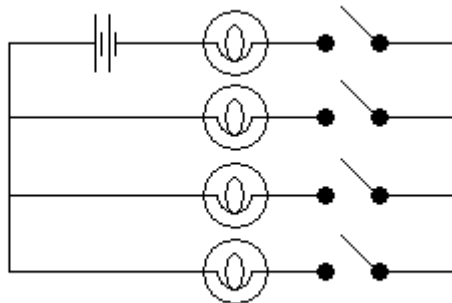
1.

What are the readings of ammeter 3 and ammeter 5?

b) If the total resistance of the circuit is 0.100 Ω, find the voltage of the circuit.

a) $A_3 = 6 - (3 + 1) = 2$ A

$A_5 = A_{total} = 6$ A

b) $V = IR = 6(0.10) = 0.6$ V.

How many switches need to be closed to light up one bulb?

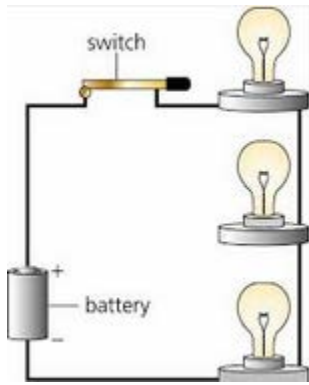A) 1   B) 2   C) 3   D)4

2.

(B) 2

b)   What kind of circuit will be created by closing that number of switches?

Series.

3.   Draw a circuit that would force the current to flow through every resistor.

         Draw any series circuit such as the one below:

4.   a) $P = VI = 120$ J/C (8 C/s) $= 960$ J/s $= 960$ W $= 0.960$ kW

b)   8C of charge are flowing through the circuit every second.

c)   Resistance
d)   The heat excites the water, starch and protein molecules in the bread and makes them move faster.
e)   It changes color, from light to brown.
f)   It's absorbed by the melting butter and by the air surrounding the toast.
g)   "Energy is very important too", said Miranda.

         $E = VIt$
         $= 120$ J/C (8 C/s)(3 min)(60s/min) $= 172\ 800$ J

5.   Ohm's Law
6.   A, because the slope $= \Delta V/\Delta I = R$
7.   C