**ST Pretest 3.1 v 2016**

1.   Which of the following materials form domains?
    a)   plastic
    b)   silver(Ag)
    c)   copper(Cu)
    d)   cobalt(Co)
    e)   neodymium(Nd)

2.   What property of "cooperating" valence electrons is mostly responsible for creating domains in special elements? CHOOSE ONE ANSWER ONLY

    (A) Their charge
    (B) The fact that they're part of metals
    (C) Their looseness
    (D) Their charge and spin

3.   What will happen to a ferromagnetic material like nickel if it comes into contact with a temporary magnet?

4.   Draw the domains within a permanent spherical magnet.

5.   a)   In the diagram of a magnetic field around a bar magnet, are the field lines drawn properly?
    b)   Label the North end of each compass needle.
    c)   Modify the diagram so that it represents a stronger magnet.

6.   a) In the diagram below, can you predict whether the 2 magnets are attracting?

    b) Are the magnetic field lines correctly represented in between the two opposite poles?
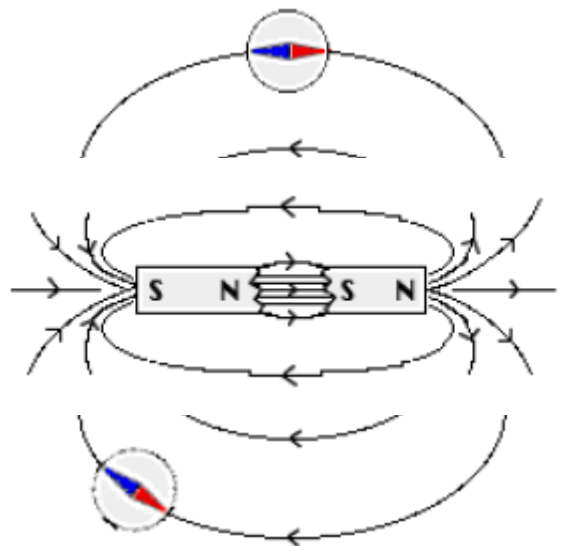
7.   Why does the compass point to the left in the diagram below?
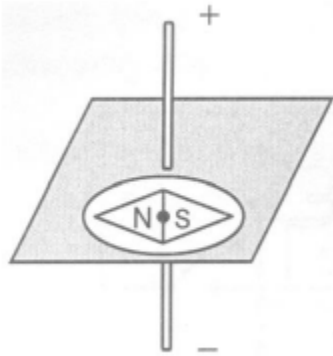
8.   A compass is placed at one end of a solenoid. (2 marks)
In which illustration is the compass needle pointing in the proper direction?

9.   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 in terms of coulombs?

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?

10.   What formula connects P = VI to P = I²R?

Voltage(volts)

A

B

C

Current Intensity (amps)
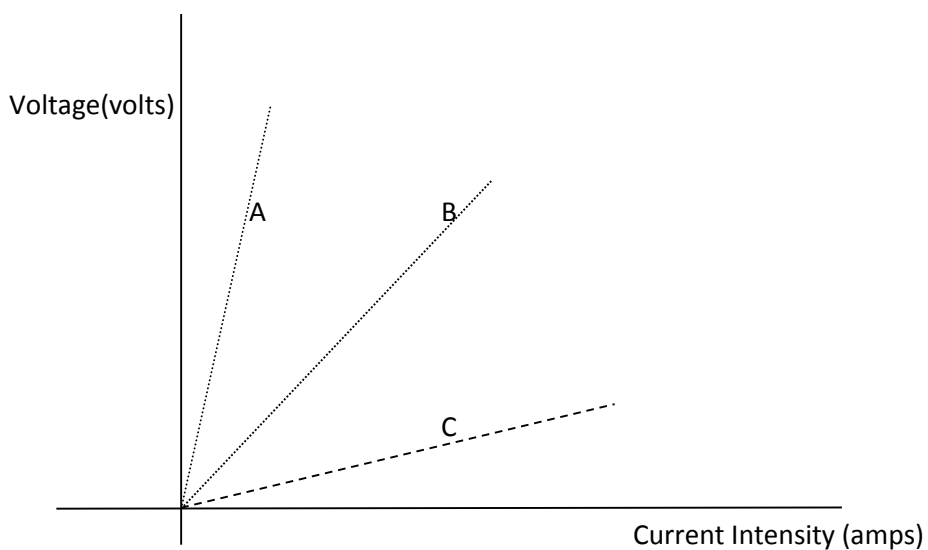
11.   In the above graph, which circuit has the highest resistance?

A
B
C
D   They all have the same resistance, just a different conductance.

12.   If 30 kJ of heat are lost from a total of 100 kJ what is the % efficiency?

13.   If 30 g of sugar are dissolved in 2.0 L of water, what is its concentration in m/V%?

ANSWERS

1.   Which of the following materials form domains? Domains = ferromagnetic=Co,Ni,Fe,Nd
a.   plastic__no_
b.   silver(Ag)__ no_
c.   copper(Cu)__ no_
d.   cobalt(Co)__yes
e.   neodymium(Nd)_ yes   Fe,Nd,Co,Ni

2.   What property of "cooperating" valence electrons is mostly responsible for creating
        domains in special elements? CHOOSE the best ANSWER ONLY

   (A) Their charge
   (B) The fact that they're part of metals
   (C) Their looseness
   (D) Their charge and spin

3.   What will happen to a ferromagnetic material like nickel if it comes into contact with a
        temporary magnet?
        It will stick to it.

4.   Draw the domains within a permanent spherical magnet.
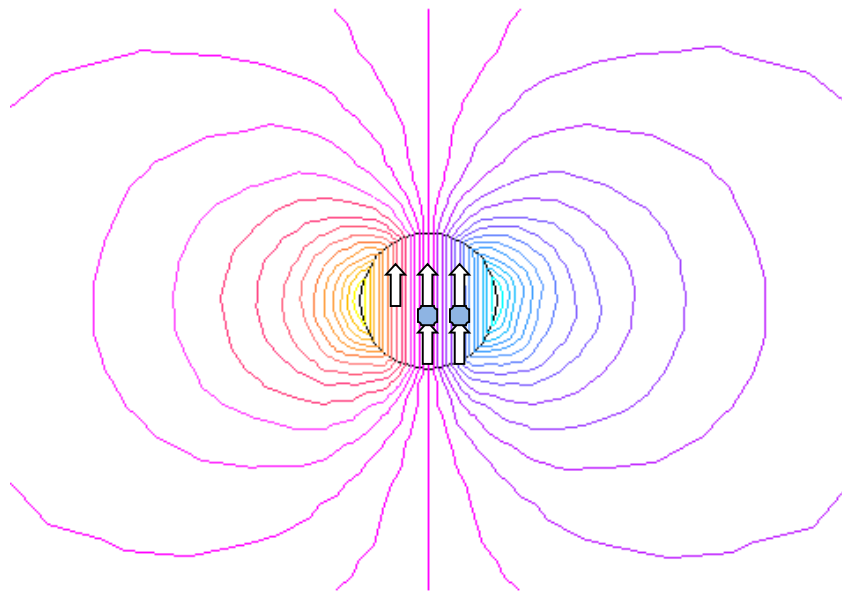
5.   a)   In the diagram above, are the magnetic field lines drawn correctly? yes
        b)   Label the North end of each compass needle. North is blue
        c)   Modify the diagram so that it represents a
stronger magnet. Add more lines
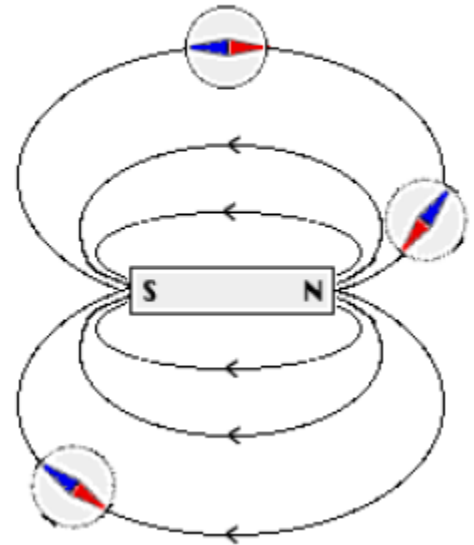
6.   a) In the diagram below, can you predict whether the 2
        magnets are attracting? Yes they are. Look at N and S in
        the middle.

        b) Are the magnetic field lines correctly represented in
   between the two opposite poles? Yes
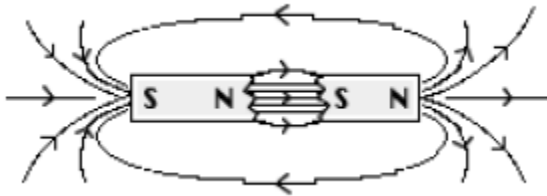
7.   Why does the compass point to the left?
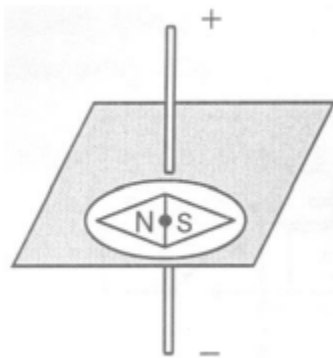
Apply the left hand rule. Have your thumb point up because the
electricity is flowing straight (like your thumb) from (-) to (+).
Notice that the rest of your fingers point left. This is the
direction of the magnetic field in front of the wire. The field is
caused by the moving electrons.

8.   A compass is placed at one end of a solenoid. (2 marks)
        In which illustration is the compass needle pointing in the proper direction?

A)

B)

C)

D)
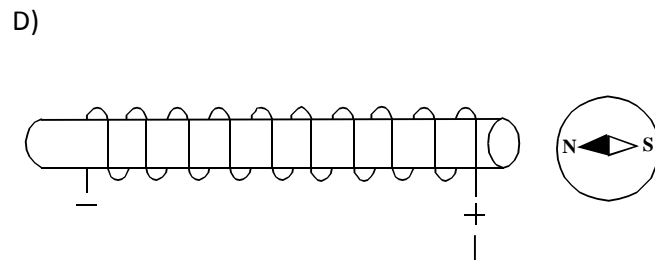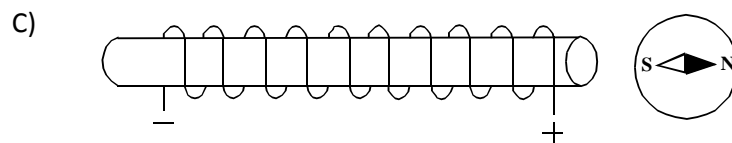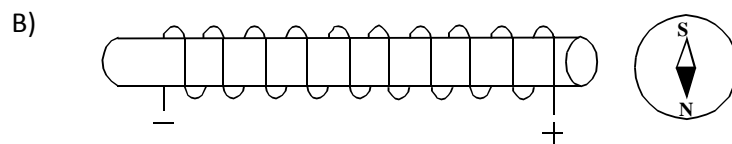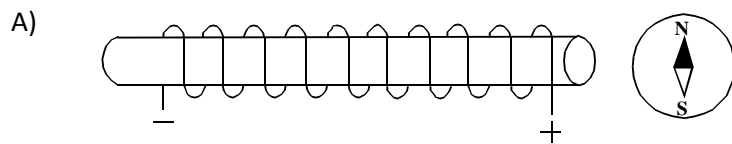
Answer D

9.   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.

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

E = VIt

= 120 J/C (8 C/s)(3 min)(60s/min) = 172 800 J

10.   Ohm's Law
11.   A, because the slope = $\Delta V/\Delta I$ = R