Sample questions for Exam 2

Choose the one alternative that best completes the statement or answers the question.

1) Heat energy travels from an object with a high
   A) thermal energy to an object with a lower thermal energy.
   B) temperature to an object with a lower temperature.
   C) both of these, for they say essentially the same thing.

2) The fact that a thermometer "takes its own temperature" illustrates
   A) the fact that molecules are constantly moving.
   B) energy conservation.
   C) the difference between heat and thermal energy.
   D) thermal equilibrium.

3) Ice has a lower density than water because ice
   A) is made of open-structured, hexagonal crystals.
   B) sinks.
   C) molecules vibrate at lower rates than water molecules.
   D) density decreases with decreasing temperature.
   E) molecules are more compact in the solid state.

4) When an iron ring is heated, the hole becomes
   A) smaller.
   B) larger.
   C) neither smaller nor larger.

5) Pour a liter of water at 40°C into a liter of water at 20°C and the final temperature of the two becomes
   A) more than 30°C.
   B) at or about 30°C.
   C) less than 30°C.

6) Warm air rises because faster moving molecules tend to move to regions of less
   A) pressure.
   B) density.
   C) both of these.
7) If an object radiates more energy than it absorbs, its
A) temperature decreases.
B) thermal energy decreases.
C) both of these.
D) neither of these.

8) A water-filled paper cup held in a flame will not catch fire. This is because
A) paper is a poor conductor of heat.
B) the inside of the paper is wet.
C) water is an excellent conductor of heat.
D) the paper cup cannot become appreciably hotter than the water it contains.

9) When a volume of air is compressed, its temperature
A) decreases.
B) increases.
C) neither increases nor decreases.

10) A positive ion has more
A) electrons than neutrons.
B) protons than electrons.
C) neutrons than protons.
D) electrons than protons.
E) protons than neutrons.

11) Rub electrons from your hair with a comb and the comb becomes
A) negatively charged.
B) positively charged.

12) An electron and a proton
A) repel each other.
B) attract each other.

13) A negatively charged rod is brought near a metal can that rests on a wood
    table. You touch the opposite side of the can momentarily with your finger. 
    The can is then
A) negatively charged.
B) charged the same as it was.
C) positively charged.
D) uncharged.
14) Charge carriers in a metal are electrons rather than protons because electrons are
A) smaller.
B) negative.
C) loosely bound.
D) all of these.
E) none of these.

15) Two charges separated by one meter exert a 1-N force on each other. If the charges are pushed to 0.25-m separation, the force on each charge will be
A) 4 N.
B) 8 N.
C) 16 N.
D) 1 N.
E) 2 N.

16) Moving electric charges will interact with
A) an electric field.
B) a magnetic field.
C) both of these.
D) none of these.

17) Magnetic domains normally occur in
A) silver.
B) iron.
C) copper.
D) all of these.
E) none of these.

18) Suppose you are served coffee at a restaurant before you are ready to drink it. In order for it to be the hottest when you are ready for it, you should add cream
A) at any time.
B) right away.
C) when you are ready to drink the coffee.
19) Two charges separated by 1 m exert a 1-N force on each other. If the charges are pulled to a 3-m separation distance, the force on each charge will be
A) 0 N.
B) 3 N.
C) 9 N.
D) 0.11 N.
E) 0.33 N.

20) A proton and an electron are placed in an electric field. Which undergoes the greater acceleration?
A) the proton
B) the electron
C) both accelerate equally
D) neither accelerate