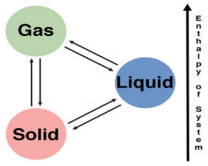
Ch 22 (Heat Transfer), Ch 23 (Phase Change), Ch 24 (Thermodynamics) Test Review

Review your Ch 21-24 Guided Readings and all assignments from these chapters. Also make sure you have watched the videos for this unit.

Chapter 22 - Heat Transfer

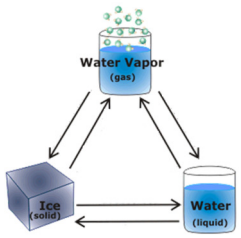
1. List and describe the characteristics of the 3 methods of heat transfer. Make sure you can classify examples by type.
2. In conduction, what subatomic particles are transferring the energy?
3. Why does the metal part of your desk feel cooler than the top if they are really the same temperature?
4. What type of matter can transfer energy by convection?
5. As air warms it _____ (expands, contracts) and _____ (rises or sinks).
6. Wood is a very poor _c_____ of heat. This is one of the reasons it is possible for people to walk on coals.
7. A black glass and a white glass are set outside in the sun. Which will warm up faster? Why?
8. The planet Earth gains and loses heat primarily through _____.
9. Light colored clothes help keep you cool because they _r_____ radiant energy. _____colored clothes make you warm up faster because they absorb radiant energy.
10. Which would be a better insulator and feel warmer….a rug or tile?
11. Dark colors are good _____of radiation (absorbers, emitters, reflectors)



Chapter 23 – Phase Change

You will see a phase diagram picture. Study yours from the packet! Know what areas represent phase changes.

1. What is heat of fusion and heat of vaporization?
2. Does vaporization of water release or absorb energy?
3. Does the freezing of water release or absorb energy?
4. What are the names of the following phase changes: solid → liquid, liquid → solid, gas → liquid, liquid → gas, solid → gas, gas → solid.
5. Condensation is a _____ process (warming or cooling).
6. When water condenses, does the surrounding air warm or cool?
7. List examples of good insulators (give at least 3).
8. Heat transfer in a metal would be through _____.
9. Which phase changes release heat? (there are 3)
10. What is the difference between evaporation and boiling.
11. Dew is the result of which phase change?



Chapter 24 - Thermodynamics:

1. Doing work on a system without adding heat, does what to the temperature?
2. Systems left alone tend to become more or less disordered? What is the term for this?
3. List the 2 Laws of Thermodynamics.
4. List some places that adiabatic processes occur.
5. What helps determine the efficiency of a heat engine (relate to input and output reservoir).
6. Work that is done on a system increases both internal e_____ and t_____.
7. Heat can only flow from _____objects to _____ objects.
8. What is the lowest possible temperature in nature?
9. The first law of thermodynamics is related to which law that we have already talked about.
10. What does entropy measure?

Can you explain the greenhouse effect and list pros and cons for / against it?

PROBLEMS – Heat transfer (heat of fusion, heat of vaporization etc.)

c of water = 4.186 J/g°C,
c of ice = 2.108 J/g°C,
c of steam 1.996 J/g°C
H_f water = 334 J/g
H_v = 2,260 J/g

Solid to solid
Liquid to liquid
Steam to steam } $Q = mc\Delta T$

Freezing to melting $Q = mH_f$

Boiling to condensation $Q = mH_v$

} Provided on test

1. A 100 g sample of 80°C water is heated to 102°C. What heat is required to change it to steam at 102°C?

2. A 50 gram sample of 60°C water is heated to 90°C. How much heat is required for this temperature change?

3. How much heat is required to change 400g of ice to water? (at 0°C)

4. How much heat is required to change 210 g of water to steam? (at 100°C)