HEAT EXCHANGER DESIGN –CHAPTER 3 – Summarizing questions

1) What are the two arrangements possible for a concentric tube heat exchanger? Advantages/Disadvantages?
2) What is the purpose of the baffles in shell-and-tube heat exchangers?
3) What means "mixed" and "unmixed" for cross flow heat exchangers?
4) Write down LMTD formula for both counter- and co-current heat exchangers.
5) What can be said about the change in temperature of a saturated flow undergoing evaporation or condensation in a heat exchanger? What does it mean for the Cp of this stream?
6) Will the fluid having the minimum or maximum heat capacity rate experience the largest temperature change in a heat exchanger?
7) Why is the maximum possible heat transfer rate in a heat exchanger NOT equal to $C_{max}(T_{h,in} - T_{c,in})$? Can the outlet temperature of the cold fluid ever exceed the inlet temperature of the hot fluid? Can it exceed the outlet temperature of the hot fluid?
8) What is the effectiveness of a heat exchanger? What is the range of possible values? What is NTU? What is the range of possible values? What is the unit for these two parameters?
9) How does effectiveness evolve if:
   a. A increases
   b. U increases
   c. C_{min}/C_{max} decreases
10) What is the penalty of increasing the length of a heat exchanger? What is the penalty of increasing U?