Equipment III
Heat Exchangers

Course Objectives

1. Describe the purpose and function of a heat exchanger.
2. Explain the concept of heat transfer in a heat exchanger.
3. Describe typical applications of heat exchangers in chemical processing.
4. Describe the variations in fluid flow in a heat exchanger.
5. Distinguish between the different types of heat exchangers.
6. Describe the purpose and function of a condenser.
7. Explain the function of auxiliary or support equipment to the function of a heat exchanger.
8. Identify typical operating parameters associated with controlling a heat exchanger.
9. Describe common performance issues related to heat exchangers including their causes and indicators.

Key Terms (Define the following)

condenser - _____

_____

fin - _____

_____

heat exchanger - _____

_____

water hammer - _____

_____

Questions

1. Describe how heat is transferred in a heat exchanger.

_____

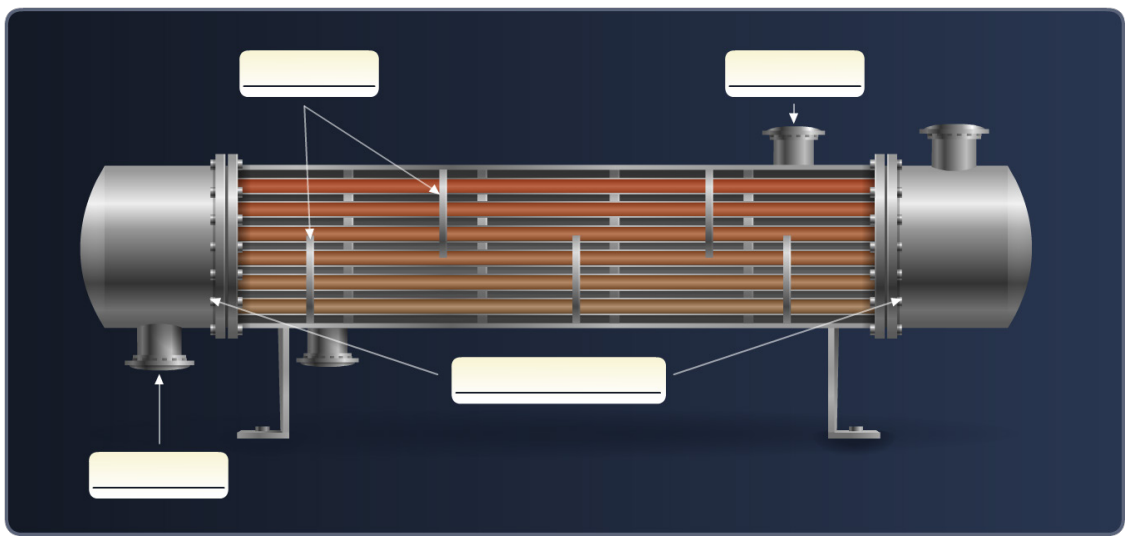
_____

_____

2. List three types of direct contact heat exchangers.
   1) _____
   2) _____
   3) _____

3. List three flow arrangements of indirect contact heat exchangers.
   1) _____
   2) _____
   3) _____

4. Label the parts of this shell and tube heat exchanger.



5. Explain the difference between gasketed plates verses brazed or welded plates in plate heat exchangers.

_____

_____

_____

6. What are the advantages and disadvantages of each?

	Advantages	*Disadvantages*
Gasketed	_____	_____
	_____	_____
Brazed	_____	_____
	_____	_____

7. List the three ways to promote condensation in a system.
   1) _____
   2) _____
   3) _____

8. Describe three direct contact condensers.
   1) _____
   2) _____
   3) _____

9. How is a shell and tube condenser different from a standard heat exchanger?
   _____
   _____
   _____

10. List the types and causes of fouling.
   1) _____
   2) _____
   3) _____
   4) _____
   5) _____
   6) _____

11. List three common causes of water/steam hammering.
   1) _____
   2) _____
   3) _____

12. Describe three indicators that a heat exchanger is stalling.
   1) _____
   2) _____
   3) _____