Equipment III
Cooling Towers

Course Objectives

1. Describe the purpose and function of a cooling tower.
2. Identify the components of a cooling tower.
3. Explain the theory of operation of a cooling tower.
4. Describe typical applications of cooling towers in chemical processing.
5. Distinguish between the different types of cooling towers.
6. Explain the function of auxiliary or support equipment to the function of a cooling tower.
7. Describe common performance issues related to cooling towers including their causes and indicators.
8. Describe the purpose and elements of a water treatment program.

Key Terms (Define the following)

approach - _____

_____

blowdown - _____

_____

cooling tower - _____

_____

cycle of concentration (CoC) - _____

_____

drift - _____

_____

dry bulb temperature - _____

_____

fill - _____

range - _____

wet bulb temperature - _____

Questions

1. How is wet bulb temperature measured?

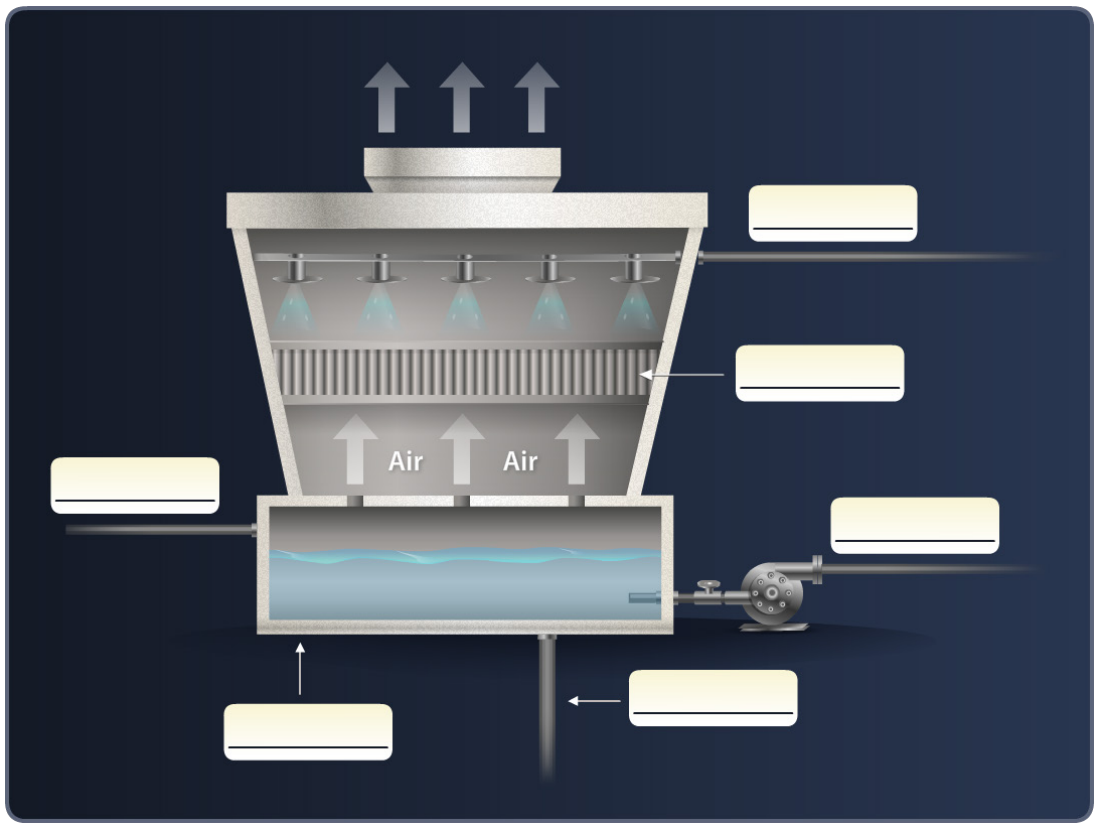
2. How does humidity affect cooling tower performance?

3. What is the difference between the cooling range and the approach?

4. List the two types of fill and describe how each works to promote evaporation.
   1) _____
   2) _____

5. Describe the difference between an indirect (dry) cooling tower and a direct (wet) tower.

6. Label the parts of this cooling tower.



7. Explain how a fan is used in an induced draft cooling tower and a forced draft cooling tower.

8. Describe two ways that air can be directed over the water in the fill.
1)
2)

9. How is cycle of concentration determined?

10. List the elements in a water treatment program.

11. Why is water treatment required in a cooling tower?

12. List the factors that affect ice formation in a cooling tower.