**Chemical Engineering 374**

**Reading Questions 25—Chapter 12.1-12.3**

**Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the “stagnation process,” what happens to the kinetic energy of a gas that undergoes that process, and what happens to the temperature and pressure of the gas as a result?
2. The speed of sound in a material can be expressed as a function of dP/dr of the material (partial derivatives here). On that basis, would you expect the speed of sound to be greater in water or in air?
3. In supersonic flow of an isentropic ideal gas, if the area is increased, what happens to the velocity? (Support your answer). How does the change in density affect the velocity?
4. What is meant by the expression that the flow is “choked?”
5. For subsonic gas on one side of a converging-diverging nozzle, list the five possible conditions on the other side.