

CM 2200, Fall 2007, Homework 7–Flotation and Hydrocyclones

Q1. An ore contains chalcopyrite, pyrite, and galena. Describe a process for separating this ore into three products (a chalcopyrite product, a pyrite product, and a galena product) while separating them from the gangue mineral (quartz). Give the necessary chemical reactions and reagents, and draw a flowsheet for the process. You do not need to describe the comminution portion of the process. (20 pts)

Q2. What type of collector would be used for flotation of each of the following types of ore? Give a specific example for each type of collector (assume that the gangue is silicate minerals in each case) (6 pts):

(1) Hematite

(2) Chalcopyrite

(3) Coal.

Name _____

Q3. An ore contains sphalerite and galena. Describe a process for separating this ore into two products (a sphalerite product, and a galena product) while separating them from the gangue mineral (quartz). Give the necessary chemical reactions and reagents, and draw a flowsheet for the process. You do not need to describe the comminution portion of the process.(20 pts)

Q4. What are the three principal classes of reagents used in flotation?(15 pts)

Q5. What is a Hydrocyclone? What is it used for? Draw an efficiency curve for a hydrocyclone under spray conditions. (15 points)