Major (November 2013)

CHL133- Powder processing **time: 2hr**

1. a) What are the problems incurred during powder flow from silo
   b) Derive jennsen equation to estimate effect of vertical force acting at the bottom of silo with height of silo

2. a) Explain the selection of shape and size of Ball used with reference to the feed shape and product size in Ball mill grinding.

b) Why ball mill and no other mill is used by following industries

i) Paint industry

ii) Aluminum powder in fire cracker industry

iii) Ceramic tile manufacturing plant

3.a) Estimate the rpm of Hammer to be set for crushing mineral particle. The force enquired to crush single particle was measured and found to be 4.3 KGm/sec^2. The hammer weight is 2 Kg and length of Hammer from shaft middle is 0.6 m.

b) Which is the effective part of hammer, arm or tip of hammer, explain? Explain hammer shape for breaking particle and for de-agglomerating the particle in pharma industry.

4. Write about long problem minimum 250 words

a) Title, b) Significant understanding, c) Which industry you can contribute and what, d) From results of study which one of the following you will opt and why?

i) Work in industry ii) Further research iii) Entrepreneur

5. What are the methods for measuring Angle of repose? Why it changes with shape of particle

6. What are the significant variables which affect the performance of Bag filter?

7. What are the various methods to measure flowability of powder and methods to improve flowability of powder?

8. Derive equation to predict curt particle size of separation in cyclone separator. Explain different application of cyclone as gas solid heat exchanger, reactor and incinerator.

9. Write short notes on the following

a) Jet milling, b) use of nano particle in pharma industry, c) Production of corn flakes