B.E. 7th Sem Mining Engineering Examination, December 2011

Mineral Beneficiation (MN-702)

Full Marks: 70 **Time: 3 hours**

FIRST HALF

Answer question no. 1 and any two from the rest in the First Half

1. a) What do you mean by communition?

   b) Explain Rittinger's law of communition.

   c) Explain open and closed circuit crushing.

   d) Draw a functional line diagram of a Gyratory crusher showing different components.

   e) What the number 325 in a 325 mesh indicates?

   f) Name different processes of dewatering.

   g) Fill up the overflow, cumulative overflow (%) and cumulative underflow (%) blank place in the following table:

Size (mesh)	overflow	Cumulative overflow (%)	Cumulative underflow (%)
60	4. 5	4. 5	95.5
100		18	
150	18.0	36	
200	27.0		
325	37.0	100	

1+2+3+3+1+2+3 =15

2. a) Explain Blake, dodge and Universal type of Jaw Crusher.

   b) Explain cascading, cataracting and centrifuging in relation to a ball mill.

c) Explain d_{50} Size of a screen with a diagram.

3 + 5 + 2 = 10

3. Deduce the expression for calculating efficiency of a screen. 10

4. a) What is gravity separation process?
   b) Explain three basic principles of Jigging with suitable diagram.
   c) Explain Plunger Jig with a diagram.

1 +5 +4=10

5. a) Explain the principle of shaking table.
   b) With the help of a diagram explain Froth Flotation in brief.

5+5=10

2ND HALF

Answer questions No. 6 and any two from the rest

6. a) What is the difference between free and hindered settling?
   b) Deduce the terminal velocity for a mineral particle falling in a liquid column.
   c) With neat sketch describe the structure and operation of a hydrocyclone. (2+5+8)

7. a) What are the requirements for industrial concentration of minerals by magnetism?
   b) Write short notes on dry belt magnetic separator and magnetic precipitator. {3+(4+3)}

8. a) What do you understand by floatation?
   b) Write down the principle of floatation process.
   c) Which facts are being utilized in the floatation process? What are the different types of floatation? (2+4+4)

9. a) What is the principle of heavy media separation?
   b) How would you clean and recirculate heavy media in DMS?
   c) Write short notes on i) norwalt washer ii) drewboy baths (2+3+3+2)

10. a) Write down an algorithm for the optimization of cyclone efficiency.
    b) Explain full teeter phenomenon
    c) Name four heavy medium liquids used in industrial separation process. (6+2+2)