Code No: NR221804 **NR**

II B.Tech II Semester Supplementary Examinations, April/May 2005
MINERAL DRESSING
(Metallurgy & Material Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the objectives of ore processing.
   (b) What is crushing and what are its objectives?
   (c) With neat diagrams explain the working of a Gyratory Crusher. What is its advantages as compared to Jaw Crusher.
   (d) Explain the working of a whistle sampler with a line diagram. What is its advantage.

2. (a) What is sieving? What is its working principle?
   (b) Explain briefly how a sample is sieve analyzed in a laboratory.
   (c) Explain how the sieve analysis data is presented in various forms.
   (d) What are the advantages and limitations of Mars fraction vs average size plot. How are its limitations rectified.

3. (a) What is the necessity of studying the movement of solids in fluids in mineral processing?
   (b) What is fluid resistance? Mention the factors on which it depends.
   (c) What is stoke‘s law and what are its conditions?
   (d) Derive an expression for terminal velocity of a fine spherical particle settling in a fluid medium under stokes conditions?
   (e) Discuss the velocity vs average size plots

4. (a) Derive an expression for distance traveled and velocity under Newton conditions from first principles.
   (b) Explain how is it useful in Jigging.
   (c) Discuss the vessel wall effect on settling velocity of a particle. Give the various correction factors for its effect under stokes as well as Newton conditions.

5. (a) What is the necessity of quantifying the concentration operations?
   (b) Define and distinguish Ratio of concentration and Recovery.
   (c) 100 tons of pb-2n sulphide ore is treated to produce a lead concentrate, zinc concentrate and tailing. The assays of the feed and various products are as under.

	Weight(Tones)	Pb assay(5%)	Zn assay(%)
Feed	100	7.7	11.9
Pb conc	-	50.0	5.0
Zn Conc	-	10.0	50.0
Tailing	-	1.0	2.0

Determine:

(a) Ratio of concentration of Zn concentrate

(b) Recovery of Pb in Lead concentrate

(c) Recovery of Zn in Zinc contrate.

6. (a) What is Jigging and what is its principle.

   (b) Discuss the theory of Jigging and operating variable of the Jig.

7. (a) Explain the importance of contact angle and hydropobicity in flotation.

   (b) Explain with suitable examples the mechanism of action and the role of Activators and Depresses in flotation.

8. Write short notes on any FOUR of the following:

   (a) pneumatic classifiers

   (b) With-rill type of electro magnetic separators

   (c) Work of adhesion in flotation

   (d) Washability curves

   (e) Liberation.

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