

**II B.Tech II Semester Supplementary Examinations,
November/December 2005
MINERAL DRESSING
(Metallurgy & Material Technology)**

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

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) What is liberation and what are its objectives?
(b) Define degree of liberation and degree of locking?
(c) Distinguish between Free and Locked particles.
(d) Explain the liberation by size reduction in ores containing.
 - i. Minerals of equal abundance.
 - ii. Minerals of unequal abundance.(e) Explain liberation by detachment with suitable examples. [2+2+2+8+2]
2. (a) Define grinding and list down its objectives.
(b) Distinguish between the following:
 - i. Open circuit and closed circuit grinding.
 - ii. Dry and wet grinding.(c) What are tumbling mills? What is its principle of working? Give their classification.
(d) Explain Davis Zones in Ball mills. [2+3+3+4+4]
3. (a) State Newton's law of fluid resistance.
(b) Derive an expression for the terminal velocity of a coarse spherical particle setting in a fluid medium under turbulent flow conditions from first principles.
(c) What is Rittinger correction to above expression.
(d) Discuss coefficient of viscosity V_s Reynolds number plot. Highlight its advantages. [2+8+2+4]
4. Explain the following:
 - (a) Laboratory sizing and reporting data in various numerical and graphical forms.
 - (b) Industrial screening surfaces and screens. [8+8]
5. (a) What is the principle of magnetic separation.
(b) What factors effect magnetic separation.
(c) Explain with a neat sketch any one magnitic separation process.
(d) What are the applications of magnetic separation processes?

- (e) What is occlusion? How is it overcome? [2+3+6+3+2]
6. (a) Describe the different methods of quantifying concentrating operations. Explain their significance.
- (b) With the help of a neat sketch, explain the construction and working principle of Alex-Cone classifier. [8+8]
7. Giving examples discuss the following with respect to their mechanism of action in flotation process.
- (a) Frothers
- (b) Collectors
- (c) Activators
- (d) Depressors [4x4=16]
8. Write short notes on any FOUR of the following.
- (a) Advantages of ore dressing
- (b) Gyratory crusher
- (c) Rod mills
- (d) Coal washing
- (e) Classification of polar minerals. [4x4=16]
