Code No: 07A4EC16 **R07** **Set No. 2**

II B.Tech II Semester Examinations,December 2010
MINERAL DRESSING
Metallurgy And Material Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain about the importance improvements in classifiers.
   (b) Compare and contrast classifiers and cyclones. [8+8]

2. (a) Distinguish fully between
      i. crushing
      ii. grinding and
      iii. sizing
   (b) Compare and contrast
      i. batch grinding and
      ii. wet grinding with necessary examples. [8+8]

3. (a) Compare and contrast
      i. gyratory crushers and
      ii. Jaw crushers
   (b) Write a detailed notes on the chromological developments in the mineral dressing methods. [8+8]

4. (a) What is contact angle and what is its significance in the flotation of mineral particles?
   (b) Derive an expression for the work of adhesion in flotation. Briefly explain the signification of work of adhesion in flotation. [6+10]

5. (a) Explain the use of suspensions in heavy media separation.
   (b) Describe briefly washability curves for normal and difficult coal. [6+10]

6. (a) Differentiate between Metallic ores and non-metallic ores and give examples.
   (b) Explain the suitable examples how the various properties of minerals are used for thier beneficiation. [6+10]

7. (a) Describe the design consideration in a baum jig and compare it with harz jig.
   (b) Write briefly on study of stratification on a table. [8+8]

8. Give the mathematical expressions for terminals velocity under
   (a) Stocks are Newtonian condition and explain them fully.
   (b) Write short notes on the following.

i. Micromesh sieves.
ii. Effectiveness of sieving test. [8+8]

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Code No: 07A4EC16 **R07** **Set No. 4**

II B.Tech II Semester Examinations,December 2010
MINERAL DRESSING
Metallurgy And 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 various factors that affect the size of grinding media.
   (b) Write detailed notes on tube mills. [8+8]
2. (a) What is heavy media separation? Discuss the media used in commercial processes.
   (b) Explain briefly washability curves for normal coal. [10+6]
3. (a) What are the desirable conditions in a classifier?
   (b) With a neat sketch, explain the construction and working principle of any one classifier. [6+10]
4. (a) What is terminal velocity? Explain its significance in mineral dressing operations.
   (b) With typical examples explain the use of collectors and frothers in flotation. [6+10]
5. (a) Justify the importance of dressing an ore.
   (b) Discuss the principles and the use of magnetic separators in mineral beneficiation. [4+12]
6. (a) Explain why is it difficult to quantity the efficiency of a classifier.
   (b) Explain about efficiency of a classifier.
   (c) Explain about any one scrubbing classifier. [6+5+5]
7. (a) What is coning and quartering? Where is this method employed? Discuss the working principle of Coning and Quartering. Discuss the drawbacks of this method.
   (b) Explain the theory of liberation by size reduction method. [10+6]
8. (a) Discuss the factors that affect the settling of solids in a fluid.
   (b) Derive stokes equation for terminal velocity what are the assumptions made. Discuss limitations on the applications of stokes law. [7+9]

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Code No: 07A4EC16 **R07** **Set No. 1**

II B.Tech II Semester Examinations,December 2010
MINERAL DRESSING
Metallurgy And Material Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define and explain the terms
   i. Metal
   ii. Mineral
   iii. Ore
   iv. gangue.
   (b) What is mineral dressing? Why is it done? Discuss the economics of performing mineral dressing operations on various types of minerals. [8+8]
2. (a) Discuss the mechanism of frother action in flotation.
   (b) Explain the differences between collectors and frothers. [9+7]
3. (a) Why heavy media separation is so important?
   (b) Explain the properties of suspension of finely ground solids with respect to commercial heavy media separation process. [6+10]
4. (a) Discuss briefly any one important classifiers.
   (b) Describe the wilfley table and particle separation using it. [8+8]
5. (a) Discuss the following
   i. Zone of parabolic path
   ii. Zone of circular path
   (b) With the help of a neat sketch explain the working of Marcy rod mill. [8+8]
6. (a) Explain the constructional arrangements of a tank type mechanical classifier.
   (b) What is a pneumatic classifier. What are the media used in these classifiers. How are these different from mechanical classifiers. [8+8]
7. (a) The ratio of concentration is preferred in ferrous ore industries while recovery is preferred in non-ferrous industries. Justify.
   (b) Discuss Ball-Nortan drum separator. [6+10]
8. (a) Explain the factors that influence the falling of particles is a fluid.
   (b) Explain the reasons for the failure of Newton's equation.
   (c) Explain about microscopic sizing. [6+5+5]

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Code No: 07A4EC16 **R07** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
MINERAL DRESSING
Metallurgy And Material Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) List the various reasons for benefication of ores prior to metal extraction. Describe the various properties of the minerals based on which they are upgraded.
   (b) Derive from fundamentals the equation for work of adhesion between an air bubble and a mineral. [10+6]
2. (a) What is heavy liquid? What are its properties? Give two examples of heavy liquids.
   (b) Compare heavy media separation with froth flotation. [8+8]
3. (a) Explain the various mechanisms of passing particulars through a screening Surface.
   (b) Explain is detail about different types of screen standards. [8+8]
4. Discuss in detail electrostatic separation process and compare it with magnetic separation process. [16]
5. Explain the following:
   (a) Factors effecting the jigging process.
   (b) Factors effecting the mineral behaviour in tabling operation. [8+8]
6. (a) Between wet grinding and dry grinding which is preferred in majority of applications? Why? Explain in detail.
   (b) 'Ball mills are operated at higher speeds than rod mills'. Explain with necessary reasons. Also explain the effect of speed of ball mills and rod mills on the grand products. [8+8]
7. (a) Draw a neat sketch of position rolls in roll crusher and show the angle of Nip and explain its importance.
   (b) Give the mathematical expression for the capacity of a roll crusher and explain the various terms in it. [8+8]
8. Draw a neat sketch of Dorr multizone classifier. Explain in detail its working principle. Discuss the constructional details advantages, disadvantages and applications of the classifier. [16]

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