Code No: R09221805 **R09** **Set No. 2**

**II B.Tech II Semester Examinations,APRIL 2011**
**MINERAL DRESSING**
**Metallurgy And Material Technology**

**Time: 3 hours** **Max Marks: 75**

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

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1. (a) Explain the working principal of classification.
   (b) Distinguish between coarser, moderate and finer particles, giving their size ranges in terms of inches and mesh numbers/ sizes. [7+8]
2. Write short explanatory notes on the following:
   (a) Magnetic Separation
   (b) Electrostatic Separation. [7+8]
3. (a) Explain, with the help of flowchart, beneficiation of coal.
   (b) What are different media used in Heavy media separation? Give examples and explain. [7+8]
4. (a) Discuss in detail about stokes law of sedimentation.
   (b) Discuss the
      i. advantages
      ii. disadvantages and applications

   of 'Elutriation' and sedimentation. [7+8]
5. (a) Explain any two types of Ore dressing operations in detail. Discuss their relative advantages and disadvantages.
   (b) Name the important methods used for siting. Explain them in detail. [7+8]
6. (a) Explain about the following zones in a ball mill
      i. Empty zone
      ii. Dead zone
      iii. Zone of circular path
      iv. Zone of parabolic path
   (b) Explain about crushing region in a ball mill. [11+4]
7. (a) Briefly explain about the principles that are used in various methods of ore concentration.
   (b) What is Jigging? What are the principal features of jig design? Describe briefly Hancock Jig. [6+9]
8. (a) Explain the mechanism by which a collector attaches to the surface of a mineral.

(b) Discuss briefly flotation machines. [6+9]

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Code No: R09221805 **R09** **Set No. 4**

**II B.Tech II Semester Examinations,APRIL 2011**
**MINERAL DRESSING**
**Metallurgy And Material Technology**

**Time: 3 hours** **Max Marks: 75**

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

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1. (a) Distinguish between binary, ternary, quarternary particles with reference to locked particles.
   (b) Explain the differences between roll crusher and Jaw crusher. [6+9]
2. (a) Explain the differences between impact and rubbing with regard to crushing and grinding operations.
   (b) What is the importance of liner in a ball mill? What are the various types used in ball mill? Explain the influence of liners and the efficiencies of ball mills. Discuss. [6+9]
3. (a) Explain various types screen cloths or screen materials used and discuss their relative advantages and disadvantages.
   (b) With the help of a neat sketch explain the working of 'grizzly'. [7+8]
4. Discuss in detail electrostatic separation process and compare it with magnetic separation process. [15]
5. (a) With suitable examples explain the mechanism of operation of:
      i. Collectors and
      ii. Frothers.
   (b) Explain briefly diferential flotation of lead-zincores. [9+6]
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. [5+5+5]
7. Discuss the following:
   (a) Heavy meida separation process.
   (b) Concentration of Lead-Zinc ores. [7+8]
8. (a) Describe wilfly table with respect to its construction and operating conditions.
   (b) Discuss briefly design considerations in a Jig. [8+7]

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Code No: R09221805 **R09** **Set No. 1**

**II B.Tech II Semester Examinations,APRIL 2011**
**MINERAL DRESSING**
**Metallurgy And Material Technology**

**Time: 3 hours** **Max Marks: 75**

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

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1. (a) What do you mean by gangue material? Explain them with suitable examples.
   (b) Explain various methods used to collect samples in mineral dressing operation. [6+9]

2. Write short notes on the following
   (a) Anaconda classifier.
   (b) Fahrenwald sizer. [15]

3. (a) Discuss the mechanism of frother action in flotation.
   (b) Explain the differences between collectors and frothers. [9+6]

4. (a) With the help of a neat sketch explain the working of a rod mill.
   (b) 'Fire seting has been used as a means of breaking ore in mines since antiquity'. Explain in detail. Explain the principle of fire setting. [7+8]

5. Write short explanatory notes on the following:
   (a) Heavy media separation process
   (b) Concentration of Lead-zinc ores. [7+8]

6. (a) Write short notes on
      i. Elutriation
      ii. Sedimentation
   (b) Explain how you can determine the average size of particles. [9+6]

7. (a) What are dia magnetic and paramagnetic substances? Give examples.
   (b) How are magnetic separations classified? And disucss one process. [6+9]

8. (a) Discuss the principles utilized in the separation of mineral particles on a wilfly table.
   (b) Explain why it is necessary to classify a feed for the jigging process. [9+6]

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Code No: R09221805 **R09** **Set No. 3**

**II B.Tech II Semester Examinations,APRIL 2011**
**MINERAL DRESSING**
**Metallurgy And Material Technology**

**Time: 3 hours** **Max Marks: 75**

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

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1. (a) Define rock, ore and mineral.
   (b) With the help of a flow chart, explain beneficiation of Iron ore. [6+9]
2. (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. [7+8]
3. (a) Discuss in detail the working principle of sedimentation process with examples.
   (b) Explain with examples about various types of 'screen standards'. [7+8]
4. (a) List the reasons for beneficiation process prior to extraction.
   (b) Explain clearly how to draw washability curves and interpret them. [6+9]
5. (a) What is flowing film concentration? Briefly explain the effect of the following variables on the behaviour of mineral particles in this concentration method:
      i. Specific gravity of particles
      ii. Flow rate of the fluid
      iii. Slope of the deck and
      iv. Shape of the particle.
   (b) Describe the principle of working and operational details of a wilfly table. [7+8]
6. (a) What is cascading? Discuss in detail the cascading action in the operation of a ball mill.
   (b) What do you mean by critical speed in a ball mill operation? What is its significance? Explain the influence of critical speed on the operation and performance of a ball mill. [8+7]
7. (a) Explain the major similarities & dissimilarities between Akins classifier and Hardinge classifier.
   (b) Explain about Dorrco sand washer. [7+8]

8. (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+9]

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