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Total Number of Pages: 2

B.Tech
PEMT5302

5th Semester Regular / Back Examination 2016-17

MINERAL PROCESSING

BRANCH(S): METTA, MME

Time: 3 Hours

Max Marks: 70

Q.CODE: Y400

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**

Q1 Answer the following questions: (2 x 10)

- a) What are the desirable physical properties considered in mineral dressing?
- b) Name two type of Dryers used for drying in mineral processing.
- c) Define the terms "throat" and "throw" in crushing
- d) What are diamagnetic and paramagnetic materials?
- e) What is cyclone? Name different types of cyclones used in mineral indus
- f) The number 200 in a 200 mesh sieve indicates how many openings?
- g) In a ball mill how wearing of balls is compensated?
- h) What are the particle sizes suitable for sizing and classification techniques?
- i) Define screen efficiency.
- j) What is grinding efficiency of a ball mill?

Q2 What do you understand by the term capacity of the ball mill? Derive expression for Critical Speed of ball mill. Mention the factors that affect the size of the product in a ball mill. (2+4+4)

Q3 a) What is Rittenger's law? Discuss the classification of common industrial crushers indicating the size of mineral that can be handled by each class. (5)

b) Given an account of principle of operation of a Blake Crusher with the help of a neat sketch. (5)

Q4 a) What is the basic principle of froth floatation process? What are the ore minerals, suitable for concentration by froth floatation process? (5)

b) What is heavy media separation? Mention fluids which are used in heavy media separation with reference to coal washing. (5)

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Q5 a) Discuss the properties of minerals that influence the magnetic separation. What preparation is required on minerals for magnetic separation? **(5)**

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b) Classify magnetic separators. Discuss the performance of Drum separators. Mention the merit of Wet separators over Dry separators in fine materials treatment. **(5)**

Q6 a) What is the basic principle of sintering? Discuss the application of sintering in ferrous industry. **(5)**

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b) What do you mean by agglomeration? Discuss the use of pellets and briquettes in metallurgy. **(5)**

Q7 Explain with a neat flow sheet the beneficiation of lead-zinc sulphide ore. **(10)**

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Q8 **Write short answer on any TWO:** **(5 x 2)**

- a)** Critical Speed of ball mill
 - b)** Flowing film Concentration
 - c)** Applications of Palletization technique.
 - d)** Electrostatic Separator.
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