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Total Number of Pages : 02

B.Tech  
PCE8J001

8<sup>th</sup> Semester Regular Examination 2018-19

MINERAL PROCESSING

BRANCH : CHEM

Max Marks : 100

Time : 3 Hours

Q.CODE : F027

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- What is mineral processing?
- What is difference between Ore and Mineral?
- What are difference between metallic and non-metallic Ores?
- Give the name of ore from which Lead and Uranium is extracted.
- Define Work Index and write its unit.
- What are the main purposes of screening equipment in mineral processing industry?
- What is collection efficiency and write the function of cyclone separator?
- Define crushing efficiency and how it is related to mechanical efficiency?
- Write size range of particle for which bond's law is applicable?
- Give the name of ore from which gold and aluminum is extracted.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Write working principle of "Blake jaw crusher"?
- A pair of rolls is to take a feed equivalent to spheres of 3 cm in diameter and crush them to spheres having 1 cm diameter. If the coefficient of friction is 0.29, what would be the diameter of rolls in centimeter?
- Write significance of Size reduction in mineral processing. What are the factors affecting size reduction?
- A slurry stream containing quartz is diverted into a 1-litre density container. The time taken to fill the container is measured as 7 sec. The pulp density is measured by means of a calibrated balance, and is found to be 1400 kg/m<sup>3</sup>. Calculate the percentage solids by weight, and the mass flow rate of quartz within the slurry.
- Write working principle and construction of Ball mill.
- What is sedimentation? Explain briefly on Gravity sedimentation equipment with neat diagram.
- What are the reasons for rapid development of automatic control in Mineral Processing?
- What is froth floatation process and draw the flow sheet of original section of Palabora floatation circuit?
- Explain "Pelletisation method" of Pyrometallurgy.
- Write advantage of "Hydrometallurgy" over "Pyrometallurgy"
- Explain (a) Heap Leaching, (b) Percolation Leaching, (c) Pressure Leaching
- Draw a neat flow sheet of "Extraction of Iron from Iron ores".

**Part-III**

**Only Long Answer Type Questions (Answer Any Two out of Four)**

**Q3** Write short notes on Classifiers. **(8+8)**  
a) Mechanical Classifier  
b) Hydraulic classifier

**Q4** What is Gravity concentration in Mineral Processing? **(1+5+5+5)**  
Write short notes on  
a) Tabling  
b) Jigging  
c) Hydrocyclone

**Q5** Explain Pyrometallurgy. **(4+6+6)**  
Write short notes on  
a) Roasting and types of roasting methods  
b) Sintering

**Q6** a) Explain in detail, how Copper is extracted from Copper minerals using floatation method? **(8)**  
b) Draw a neat flowsheet for "Beneficiation of coal". **(8)**