Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PEMT 5302

Fifth Semester Regular Examination – 2014

MINERAL PROCESSING

BRANCH : MME

QUESTION CODE : H 229

Full Marks – 70

Time : 3 Hours

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

1. Answer the following questions : 2×10

   (a) What are activator ?

   (b) What do you mean by tailings ?

   (c) What is diamagnetic adn paramagnetic materials ?

   (d) What do you mean by elution ?

   (e) What is fluxed sinter ?

   (f) Which force dominates in gyratory crusher ?

   (g) Define reduction ratio.

   (h) Define comminution.

   (i) How angle of nip is expressed ?

   (j) What is elutriation ?

2. Write short notes on any three of the following : 10

   (a) Sorting clasifier

   (b) Classification of jigs

   (c) Applications of Palletization techinique

   (d) Chromite ore deposit in India

   (e) Industrial screening.

P.T.O.

3. (a) Give the various reactions for dissolution of gold in cyanide solutions. Explain how the gold is subsequently recovered from the solution. 6

(b) Explain the functions of $Ca(OH)_2$ in cyanidation. 4

4. (a) Give an account of the theory of ball mill operation. What do you mean by critical speed of ball mill ? 6

(b) Calculate the actual speed of a ball mill in r.p.m., whose internal diameter is 16 cm and the diameter of the ball used is 80 mm. 4

5. (a) Discuss theory of sampling. 4

(b) What are the different techniques by which sampling is done in the mineral industries ? Indicate their advantages and limitations. 4+2

6. (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

7. (a) Discuss the factors on which free settling of particles suspended in water depends. Mention the desirable conditions for classification. 4+3

(b) Spherical particles of quartz having Diameter 15 μm are to be settled from their mixture with water. The Sp.g of quartz is 2.65 and that of water is 1 at 25°C. A settling time of 1 minute is available. Calculate the settling velocity if he quartz particles. 3

8. With the help of a flow sheet describe the preliminary treatment of the Sulphide ore of copper. 10