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Total number of printed pages – 2

B. Tech
PECE5403

Seventh Semester Examination – 2013

MINERAL PROCESS ENGINEERING

BRANCH : CHEM

QUESTION CODE : C-233

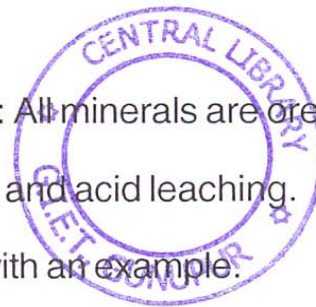
Full Marks – 70

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) Name the thermal methods in processing of ores. Mention their necessity.
 - (b) What is dead roast ?
 - (c) What is briquetting ?
 - (d) Comment on the statement: All minerals are ores.
 - (e) Differentiate between heap and acid leaching.
 - (f) Explain chelate extraction with an example.
 - (g) Explain anodic area.
 - (h) What are the different types of resins ?
 - (i) What is oxidizing roasting ? Give one example.
 - (j) Name the bacteria used in bacterial leaching process.
2. (a) Discuss, in detail, various mineral beneficiation steps. 5
- (b) Define and differentiate between roasting and calcination. Why is roasting carried out ? Mention the different types of roasting. 5



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3. Discuss, in detail, the wet chemical processing methods used to treat ores. 10
4. (a) Derive an expression for the separation parameter that determines the separation of metal M from gangue material N. What will be its unit? 5
(b) Discuss various size enlargement processes. 5
5. (a) With a neat sketch explain the operation of solid ion-exchange process (loading, back washing, and elution). 7
(b) What is anode slime? 3
6. What is electrolytic refining? Describe the electrolytic refining process of copper and tin. 10
7. Explain the recovery of gold by plate amalgamation with a neat diagram. Explain the terms amalgamation inhibitors and amalgamation promoters with proper examples. 10
8. Write short notes on any **two**: 5×2
- (a) Pelletisation
- (b) Fluidized bed roasting
- (c) Bacterial leaching
- (d) Electro-winning.
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