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Total Number of Pages : 01

B.Tech
PECE5403

7th Semester Regular / Back Examination 2017-18

Mineral Process Engineering

BRANCH : CHEM

Time : 3 Hours

Max Marks : 70

Question Code : B333

Answer Question No. 1 which is compulsory and any FIVE from the rest.

The figures in the right-hand margin indicate marks.

Answer all parts of a question at a place.

Q1. Answer the following questions : (2 x 10)

- (a) All minerals are ores. Justify it.
- (b) What happens during the sintering process?
- (c) Give an example of chloridizing roasting.
- (d) What is briquetting?
- (e) Mention two uses of solid ion exchange process.
- (f) Why the presence of moisture in sinter mix is an advantage?
- (g) Explain anodic area.
- (h) Why is an additive required during the pelletisation?
- (i) Draw the concentration profile of O_2 and CN^- near metal surface.
- (j) Name the bacteria used in bacterial leaching process.

Q2. Discuss in detail various mineral beneficiation steps. (10)

Q3. Define and differentiate between roasting and calcination. Why is roasting to be carried out? Mention the different types of roasting. Describe the flash roasting with a neat sketch. (10)

Q4. With a neat sketch explain the operation of solid ion-exchange process (loading, back washing, and elution). (10)

Q5. Explain ion-exchange kinetics for metal recovery. Explain in brief about the extraction of uranium from U_3O_8 by ion exchange followed by leaching operation. (10)

Q6. What is electrolytic refining ? Describe the electrolytic refining process of copper and tin. (10)

Q7. What do you mean by ion-exchange? Describe its kinetics and equilibrium. Formulate the expression for separation factor. (10)

Q8. Write short notes on any TWO : (5 x 2)

- (a) Bacterial leaching
- (b) Extraction of copper by dissolution
- (c) Amalgamation
- (d) Oxidizing roasting