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Total number of printed pages: 02

B.TECH
PECE5403

7th Semester Regular / Back Examination 2015-16

MINERAL PROCESS ENGINEERING

BRANCH : Chemical

Time : 3 Hours

Max Marks : 70

Question Code : T343

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.

1. Answer the following questions : **2 x 10**
- (a) "All ores are minerals or All minerals are Ore". Justify the correct statement.
 - (b) Discuss some of the physical and physiochemical properties of Ore.
 - (c) What is sintering? Draw the schematic diagram of Dwight/Lloyd machine.
 - (d) What is Agglomeration? Discuss the technique used for Agglomeration.
 - (e) Classify the Non-silicate minerals by their dominant chemistry.
 - (f) What is Smelting? Write the general steps for the metal extraction during smelting.
 - (g) Define the cementation process for the recovery of Gold from the cyanide solution.
 - (h) Classify the different types of roasting practices carried out according to the purpose.
 - (i) What is dead roast and autogenously roasting?
 - (j) What are the essential features of a successful hydrometallurgical process?
2. (a) What is the scope, objectives and advantages of mineral processing? **3**
- (b) In the field of extractive metallurgy, ore dressing is necessary preliminary step in the exploration of low-grade ores on both technological and economical ground. Justify this statement by proper ore dressing operations. **7**

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| 3. | (a) Why is roasting carried out on sulphide ores and not on carbonate ores? | 4 |
| | (b) Discuss the thermal methods (At least two) in processing of ores. | 6 |
| 4. | (a) Mention some advantages and disadvantages associated with bioleaching | 4 |
| | (b) Discuss the extraction of metals from their ores through the use of living organisms especially to pyrite and chalcopyrite. | 6 |
| 5. | (a) What is Anodic Slime? | 2 |
| | (b) What is Electrometallurgy? How it can be categorized into different processes according to the requirement. | 8 |
| 6. | (a) What is Ion Exchange? Discuss about solid exchange resin with examples. | 4 |
| | (b) With help of neat sketches discuss in detail about operation of Ion-Exchange process. | 6 |
| 7. | Highlight the processes available for the extraction of Gold. Specify the limitation of amalgamation process. Discuss in detail about cyanide process for the recovery of Gold from low-grade ore. | 10 |
| 8. | Write short notes on any two: | 5 x 2 |
| | (a) Environmental impact of metallurgical process. | |
| | (b) Amalgamating Pots. | |
| | (c) Reduction Smelting using carbon. | |
| | (d) Reagent in Leaching operation. | |
