

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019****Subject Code: 2172204****Date: 27/05/2019****Subject Name: Mineral Processing****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

- |            |   |           |
|------------|---|-----------|
| <b>Q.1</b> | (a) Define mineral processing and the various steps involved in it.   | <b>03</b> |
|            | (b) With the help of a short note explain the importance of mineral processing in mining industry.  | <b>04</b> |
|            | (c) Explain comminution and liberation in detail with different steps involved in it.   | <b>07</b> |
| <b>Q.2</b> | (a) Explain Kick's law.   | <b>03</b> |
|            | (b) List out the objectives of grinding.  | <b>04</b> |
|            | (c) Compare jaw crusher with gyratory crusher.  | <b>07</b> |
|            | <b>OR</b>   |           |
|            | (c) Explain ball mill and the various zones created in it during grinding.  | <b>07</b> |
| <b>Q.3</b> | (a) Define: (i) sizing; (ii) jigging; and (iii) thickening.   | <b>03</b> |
|            | (b) Describe the constructional features of a Blake jaw crusher.  | <b>04</b> |
|            | (c) Describe froth floatation process for the concentration of minerals. Give names of any two ores which can be concentrated using this process. | <b>07</b> |
|            | <b>OR</b>   |           |
| <b>Q.3</b> | (a) What do you understand by 'open circuit' and 'closed circuit' grinding?   | <b>03</b> |
|            | (b) Write a note on how grade of a mineral is maintained according to market demand.  | <b>04</b> |
|            | (c) Using a labeled diagram explain magnetic separators.  | <b>07</b> |
| <b>Q.4</b> | (a) Briefly explain gravity concentration.  | <b>03</b> |
|            | (b) Explain the principle underlying the working of hydrocyclons.   | <b>04</b> |
|            | (c) Write short note on heavy media separation.   | <b>07</b> |
|            | <b>OR</b>   |           |
| <b>Q.4</b> | (a) What is the purpose of collectors?  | <b>03</b> |
|            | (b) Write a short note on laws of solids settling in fluids.  | <b>04</b> |
|            | (c) Write a note on industrial screens.   | <b>07</b> |
| <b>Q.5</b> | (a) Explain vibrating tables in brief.  | <b>03</b> |
|            | (b) Explain the factors influencing washability of coal.  | <b>04</b> |
|            | (c) Draw and explain simplified flowsheet for the concentration of copper ore.  | <b>07</b> |
|            | <b>OR</b>   |           |
| <b>Q.5</b> | (a) Write a note on laboratory sieve analysis.  | <b>03</b> |
|            | (b) Explain different methods of sampling.  | <b>04</b> |
|            | (c) Draw and explain simplified flowsheet for concentration of magnetite ore.   | <b>07</b> |

\*\*\*\*\*