

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-III (NEW) EXAMINATION – WINTER 2020****Subject Code:3132103****Date:10/03/2021****Subject Name:Mineral Processing****Time:10:30 AM TO 12:30 PM****Total Marks:56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		<b>Marks</b>
<b>Q.1</b>	(a) Discuss various sources of metals.	<b>03</b>
	(b) List out Physical and chemical characteristics of magnetite and chalcopyrite ore.	<b>04</b>
	(c) Draw a flow chart showing principal steps in a mineral processing. Explain each step. List merits of mineral processing.	<b>07</b>
<b>Q.2</b>	(a) Define Ore and Mineral, Concentrate.	<b>03</b>
	(b) List out ores and Minerals for metal like Sn, Cu, Fe, Mg with their chemical composition.	<b>04</b>
	(c) Give classification of Crushers. Explain black Jaw Crusher With Neat Diagram.	<b>07</b>
<b>Q.3</b>	(a) Explain locking and unlocking of minerals and gangue.	<b>03</b>
	(b) Define liberation, Comminution and sizing, mesh no.	<b>04</b>
	(c) What is Grinding? Classify the various zones created in ball mill during grinding operation.	<b>07</b>
<b>Q.4</b>	(a) What do you understand by open 'open circuit' and 'closed circuit' grinding?	<b>03</b>
	(b) If the coefficient of friction between rock and steel is 0.5, what is minimum diameter of roll to reduce 4 cm pieces of rock to 1 cm.	<b>04</b>
	(c) Short notes on Heavy media separation.	<b>07</b>
<b>Q.5</b>	(a) Discuss Thickening process briefly.	<b>03</b>
	(b) Explain sieve analysis in brief.	<b>04</b>
	(c) By which gravity separation process Coal washing is done? Explain with diagram.	<b>07</b>
<b>Q.6</b>	(a) Describe the working principle of concentration table with suitable diagram.	<b>03</b>
	(b) What are the purpose of collectors, frothers and activators in flotation process?	<b>04</b>
	(c) On what principle forth flotation works? Explain the process of forth flotation with diagram.	<b>07</b>
<b>Q.7</b>	(a) What is role of Mineral processing in Extractive Metallurgy? Discuss.	<b>03</b>
	(b) Draw simplified beneficiation flow sheets of Bituminous coal.	<b>04</b>
	(c) Discuss about electrostatic separators.	<b>07</b>
<b>Q.8</b>	(a) Classify different types of industrial screening.	<b>03</b>
	(b) Draw beneficiation flow sheets of magnetite ore.	<b>04</b>
	(c) Discuss briefly about Magnetic Separation	<b>07</b>

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