

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2022****Subject Code:3132103****Date:13-07-2022****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.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) What is Ore Mineral and Concentrate?	03
(b) Discuss chemical and Physical characteristics of Hematite and chalcopryrite ore.	04
(c) Explain black Jaw Crusher With Neat Diagram in detail.	07
Q.2 (a) What are various sources of metals.	03
(b) Write ores and Minerals Cu, Lead, Mg and Zinc metals with their chemical composition.	04
(c) What is critical Speed? A ball mill of 1 meter internal diameter is being run at 60 rpm. It is found that the mill is not running satisfactorily. Would you suggest any modification in the operation?	07
OR	
(c) A material is crushed in a black jaw crusher and the average size of particle reduced from 6cm to 1cm with consumption of energy at the rate of 5 hp hr/tonne. What will be the consumption of energy needed to crush the same material of average size 8 cm to an average size of 2 cm? a) Assuming Rittingers' s law apply b)Assuming Kick' s law apply	07
Q.3 (a) What are advantages of ore dressing before extraction?	03
(b) Define Comminution, Sizing and Mesh number.	04
(c) List out variables in Grinding. Explain motion of charge in Ball mill.	07
OR	
Q.3 (a) Differentiate between wet grinding and Dry grinding.	03
(b) Classify different types of industrial screening.	04
(c) How heavy media separation differ from conventional gravity concentration process? Explain.	07
Q.4 (a) Discuss Thickening process briefly.	03
(b) Calculate Free settling and Hindered settling in classification.	04
(c) Explain with neat diagram Jigging Process.	07
OR	
Q.4 (a) Describe the working principle of concentration table with suitable diagram.	03
(b) Collectors, frothers and activators are used in flotation process. Justify.	04
(c) Explain the forth flotation process with its working principle.	07
Q.5 (a) List out different variables in flotation process.	03
(b) Draw simplified beneficiation flow sheets of Bituminous coal.	04
(c) Explain briefly about Magnetic Separation	07

OR

- Q.5** (a) Draw simplified beneficiation flow sheets of Cu-Sulphide ores. **03**
(b) Draw beneficiation flow sheets of magnetite ore. **04**
(c) Discuss about electrostatic separators. **07**
