Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Date: 27/12/2012

Subject code: 172204

Subject Name: Mineral Processing			
		30 am - 01.00 pm Total Marks: 70	
lnsti		ons:	
	2.	Attempt any five questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	What are the important characteristics of minerals used in their separation . Also mention the techniques employed for each characteristic.	07
	(b)	What is mineral processing. Draw a simplified flowsheet for ore processing.	07
	(a)	List different types of crushers. Draw a simplified diagram of Blake Jaw Crusher and give factors affecting its operation.	07
	(b)	Derive a relation between critical speed of ball mill and its diameter. The ball diameter can be neglected. OR	07
	(b)	What is screening? Which factors affect the screening efficiency? Classify different types of industrial screening.	07
Q.3	(a)	What is comminution & its objectives? Give different stages of size reduction with size ranges.	07
	(b)	Discuss the factors affecting the operation of grinding mills in brief. What do you understand by 'Open Circuit' & 'Closed Circuit' grinding. OR	07
Q.3	(a)	What is classification . Draw a chart showing different types of classifiers and explain Hydro cyclone.	07
	(b)	Derive equation showing 'Terminal Velocity' dependence on small spherical particle size & densities of particle & fluid under free settling conditions.	07
Q.4	(a)	What is Jigging operation? Draw a diagram of Harz Jig showing different parts and explain its operation.	07
	(b)	Explain in brief 'Dense Media Separation' . Describe different media employed for the operation with examples. OR	07
Q.4	(a)	What is Thickening (Sedimentation) process? Draw a simplified diagram showing common features of a conventional thickener (Dorr Thickener)	07
Q.4	(b)	Define Flotation process? How do different flotation reagents like Collector, Frother, Activator & Depressant affect flotation process? Explain in brief.	07
Q.5	(a)	What is magnetic separation? List out different minerals responding to magnetic separation.	07
	(b)	Draw schematic diagram of Dry-Drum magnetic separator and explain its operation	07
		OR	
Q.5	(a) (b)	What is Electrical Separation? Explain High Tension Separator in brief? Write short notes (Any Two)	07 07
		i) Pressure Filters ii) Air classifier iii) Recovery & Enrichment ratio iv) Bauxite ore processing	
