

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 3133507****Date: 28/11/2019****Subject Name: Basics of Unit Operations (BUO)****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.

		Mark
Q.1	(a) Define specific surface area, surface mean diameter and volume mean diameter for particles.	03
	(b) Differentiate Jaw crusher and Gyratory crusher.	04
	(c) Explain the working and construction of a rotary drum filter with diagram.	07
Q.2	(a) Define various purposes of agitation.	03
	(b) Derive method for calculation of power consumption for agitator	04
	(c) What will be the power required to crush 500 tons per hour of limestone if 80% of the feed passes 150 mm screen and 80% of the product a 2.125 mm screen? Work index of limestone is 12.74.	07
	OR	
	(c) Define agitation and mixing. Enlist different types of flow pattern induced in an Agitated vessel (liquid).	07
Q.3	(a) Explain the power requirement for a crushing mill by Rittinger's power laws with expressions.	03
	(b) Explain the working and construction of a ball mill with a neat sketch.	04
	(c) Explain about Hydro cyclone	07
	OR	
Q.3	(a) Discuss about sink and float method.	03
	(b) What are the uses of filter aid and filter media?	04
	(c) Explain the principle, construction and working of a roll crusher with a neat sketch.	07
Q.4	(a) Differentiate clarifier and classifier.	03
	(b) Discuss pros and cons of filter press.	04
	(c) With the help of neat sketch explain different types of impellers for agitation of liquids along with application.	07
	OR	
Q.4	(a) What rotational speed in RPM would you recommend for a ball mill of 1200 mm in diameter charged with 75mm balls?	03
	(b) Explain about critical speed of ball mill	04
	(c) Write short notes on "Scale up in agitator design"	07
Q.5	(a) Classify comminuting equipment.	03
	(b) Discuss different laws used for size reduction.	04
	(c) Explain construction, working and applications of cyclone separator with diagram.	07
	OR	
Q.5	(a) Write short note on static mixers.	03
	(b) Describe various methods for swirling prevention	04
	(c) Explain the working and construction of a jaw crusher with sketch	07
