Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V EXAMINATION – SUMMER 2020

Subject Code: 2150502 **Date:28/10/2020**

Subject Name: MECHANICAL OPERATION

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
Q.1	**(a)**	Define: screen effectiveness	**03**
	(b)	Differentiate between: Grizzlies and Trommels	**04**
	(c)	Apply importance of mechanical operation in chemical industries	**07**
Q.2	**(a)**	Describe in short: Roll crusher with neat sketch	**03**
	(b)	Discuss laws of size reduction interpret it with the importance of the work index	**04**
	(c)	Calculate power required to crush 150 tonnes per hour of limestone if 80% of the feed passes 50 mm screen and 80% of the product a 3.125 mm screen? Work index of lime stone =12.74.	**07**
		OR	
	(c)	Calculate the critical speed of the ball mill by using following data: diameter of ball mill=450 mm, diameter of ball =25 mm	**07**
Q.3	**(a)**	Define: belt conveyors	**03**
	(b)	Determine conditions for fluidization	**04**
	(c)	Explain the fluidization regimes with neat sketch	**07**
		OR	
Q.3	**(a)**	Define: screw conveyors	**03**
	(b)	Determine minimum fluidization velocity	**04**
	(c)	Explain fluidization and its application in chemical industries	**07**
Q.4	**(a)**	Define: electrostatic separation	**03**
	(b)	Discuss batch sedimentation by illustrating it with laboratory experiment	**04**
	(c)	Label with diagram construction and working of rotary drum filter	**07**
		OR	
Q.4	**(a)**	Define: magnetic separation	**03**
	(b)	Discuss cyclone separator by illustrating it with laboratory experiment	**04**
	(c)	Label with diagram construction and working of plate and frame filter press	**07**
Q.5	**(a)**	Show typical agitated vessel with figure	**03**
	(b)	Write use of static mixers in industries	**04**

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	(c)	Show different types of impellers for agitation of liquid with diagram along with application	**07**

OR

Q.5	**(a)**	Where do industries store the solids name different equipment used for storage	**03**
	(b)	Use preventive measure for swirling and vortex formation	**04**
	(c)	Show different types of flow pattern induced in an agitated vessel (liquid)	**07**

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