GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2143608   **Date:15/05/2019**

Subject Name: Mechanical Operations in Chemical Process Industries

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 mark.**

			MARKS
Q.1	**(a)**	Define :1) Angle of nip 2) Centrifuging 3) Sieve number	**03**
	(b)	Derive the equation for screen efficiency.	**04**
	(c)	Define agitation and mixing. Write various preventive actions to be taken for avoiding vortex generation in vessel.	**07**
Q.2	**(a)**	What do you mean by comminution? Explain with its principle.	**03**
	(b)	Define screen effectiveness and derive the equation for the same.	**04**
	(c)	Explain with the neat sketch construction and working of the jaw crusher.	**07**
		OR	
	(c)	Write short note on roll crusher.	**07**
Q.3	**(a)**	Enlist different types of impeller for agitation.	**03**
	(b)	Explain comparison of open circuit operation and close circuit operation.	**04**
	(c)	Explain different laws of size reduction with its equation.	**07**
		OR	
Q.3	**(a)**	Differentiate ideal screen and actual screen.	**03**
	(b)	Write a short note on clarifiers with a neat diagram.	**04**
	(c)	Write a short note on fluid energy mill with neat figure.	**07**
Q.4	**(a)**	Define angle of nip and write down its general value.	**03**
	(b)	What is the difference between constant pressure and constant rate filtration.	**04**
	(c)	Define sedimentation and write a short note on various zones in continuous sedimentation with neat diagram.	**07**
		OR	
Q.4	**(a)**	Explain sink and float method.	**03**
	(b)	Write down various features of rotary filters.	**04**
	(c)	Explain in brief about cyclone separator.	**07**
Q.5	**(a)**	Draw the sketch of Ball mill.	**03**
	(b)	What are the different parameters affecting screening operation.	**04**
	(c)	Write down principles of cake filtration and derive equation for specific cake resistance and filter medium resistance for an incompressible cake.	**07**
		OR	
Q.5	**(a)**	Write a short note on grizzles.	**03**
	(b)	What are the different selection criteria for selection of agitator.	**04**
	(c)	What is the importance of Mechanical Operations in Chemical process Industry.	**07**

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