

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2180508

Date: 19/11/2018

Subject Name: Solid-Fluid Operations

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) Explain any three solid fluid operations	03
	(b) Describe sedimentation and elutriation methods	04
	(c) Explain about the characterization of size, shape and density plays role in solid fluid operations	07
Q.2	(a) What is the difference between mixing and agitation also write purpose for agitation	03
	(b) Write a short note on static mixers	04
	(c) Give different types of agitators used with their applications	07
	OR	
	(c) Derive hindered settling velocity equation	07
Q.3	(a) Explain process of fluidization with its applications	03
	(b) What is particulate fluidization	04
	(c) Explain with neat sketch bed design and bubbling behavior	07
	OR	
Q.3	(a) Write a short note on slurry transport	03
	(b) Explain belt conveyor, screw conveyor, bucket elevator, vibrating conveyor	04
	(c) Explain working of cyclone separator with neat sketch	07
Q.4	(a) Write the important factors for rate of filtration	03
	(b) Write advantages and disadvantages of plate filter press with neat sketch	04
	(c) What are filter aids, also give sink and float method	07
	OR	
Q.4	(a) Explain process of sedimentation with industrial example	03
	(b) Write a short note on cyclone separator	04
	(c) Describe in detail about counter current multiple contact leaching	07
Q.5	(a) Write a short note on Kennedy extractor	03
	(b) What is nucleation in crystallization	04
	(c) Explain growth of crystals in detail	07
	OR	
Q.5	(a) Write short note on slurry bed reactor	03
	(b) Explain the terms	04
	a. bound moisture	
	b. free moisture	
	c. percentage humidity	
	d. percentage relative humidity	
	(c) Explain the difference between fluidized bed reactor and fixed bed reactor	07
