Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 150505 **Date: 15/05/2017**

Subject Name: Fundamentals of Chemical Engineering Unit Operations(Institute Elective - II)

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.**

Q.1	**(a)**	Define fluid. Discuss about the Newtonian and Non Newtonian behavior of fluids with suitable examples.	**07**
	(b)	Distinguish between head meter and area meter. Describe the construction and working principle of Rotameter.	**07**
Q.2	**(a)**	Define Unit operations and list out the types of unit operations giving brief introduction.	**07**
	(b)	With a neat sketch explain the construction, working principle and industrial application of Roll crusher.	**07**
		OR	
	(b)	Name the various types of pumps used for the fluid transportation. Briefly explain the construction and working of any one of them.	**07**
Q.3	**(a)**	What are various modes of heat transfer? Explain them with an example.	**07**
	(b)	Explain working of cyclone separator with a neat sketch.	**07**
		OR	
Q.3	**(a)**	List out various types of valves and explain them in brief with their application	**07**
	(b)	Explain principle of cake filtration and briefly describe different types of filters used in industry.	**07**
Q.4	**(a)**	Explain the construction and working of a tray drier with a neat diagram.	**07**
	(b)	Explain crystallization process and describe different types of crystallizers in brief.	**07**
		OR	
Q.4	**(a)**	Explain with a neat sketch construction and working of shell and tube heat exchanger	**07**
	(b)	Differentiate between a pipe and tube. Briefly discuss criteria for pipe sizing and pipe joints.	**07**
Q.5	**(a)**	Define relative volatility. Explain the working principle of steam distillation. State the advantages & disadvantages of steam distillation.	**07**
	(b)	Describe liquid-liquid extraction process and criteria for selection of solvent.	**07**
		OR	
Q.5	**(a)**	State and discuss types of water cooling tower with neat diagram.	**07**
	(b)	Classify the industrial dryers. Describe the working principle and industrial application of spray dryer.	**07**

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