Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 150505

Subject Name: Fundamentals of Chemical Engineering Unit Operations

Date: 21 /12 /2010 **Time: 03.00 pm - 05.30 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 Unit operations and list out the types of unit operations giving brief introduction.	**07**
	(b)	Discuss Bernoulli's equation (Mechanical Energy equation).	**07**
Q.2	**(a)**	Explain construction and working principle of Venturimeter.	**07**
	(b)	Explain construction and working principle of Orifice meter.	**07**
		OR	
	(b)	Differentiate between pipe and tube. Briefly discuss the size of pipe and how pipe is selected?	**07**
Q.3	**(a)**	What are various modes of heat transfer. Explain them with an example.	**07**
	(b)	Discuss pool boiling and various regimes of pool boiling of saturated liquid.	**07**
		OR	
Q.3	**(a)**	Explain with a neat sketch construction and working of shell & tube heat exchanger	**07**
	(b)	Explain with a neat sketch the construction and working of vertical climbing film long tube unit.	**07**
Q.4	**(a)**	Explain construction and working of Jaw crusher.	**07**
	(b)	With a neat figure explain the construction and working of fluid energy mill.	**07**
		OR	
Q.4	**(a)**	With a neat figure explain the construction and working of conical ball mill.	**07**
	(b)	Explain working of cyclone separator or hydrocyclones.	**07**
Q.5	**(a)**	With a neat sketch explain enriching and exhausting section of distillation tower. Discuss relative volatility.	**07**
	(b)	Define liquid-liquid extraction and the criteria for choice of solvent for extraction.	**07**
		OR	
Q.5	**(a)**	Explain one component transferred material balance and minimum liquid-gas ratio for absorbers.	**07**
	(b)	What is drying? Explain typical rate of drying curve.	**07**

****