Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– EXAMINATION – WINTER - 2016

Subject Code: 2722110 **Date: 21/11/ 2016**

Subject Name: Cryogenic Engineering

Time: 2:30 pm to 5:00 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)**	Explain the Super Conduction motor and Space Simulation Chamber	**07**
	(b)	Describe application of Cryogenics in food preservation.	**07**
Q.2	**(a)**	Define Cryogenics and also discuss importance of Cryogenic.	**07**
	(b)	Explain the various phenomenon taking place with Helium Super Fluid	**07**
		OR	
	(b)	What is Cryogenic? Explain the brief application of Cryogenic.	**07**
Q.3	**(a)**	Give brief overview of Cryogenic Insulation used in Cryogenic Equipment.	**07**
	(b)	Explain the significance of the following terms as related to the properties of metals at cryogenic temperature (1) Strength to weight ratio (2) Strength to thermal conductivity ratio	**07**
		OR	
Q.3	**(a)**	Explain Kapitza Liquefaction system with neat sketch	**07**
	(b)	Classify Cryocoolers. Write their contribution in the field of Cryogenics. State the main parameters to be considered while designing Cryocoolers	**07**
Q.4	**(a)**	Explain superconducting motor and gyroscopes	**07**
	(b)	With a neat sketch explain the construction and working of chemical rocket engine.	**07**
		OR	
Q.4	**(a)**	Shortnote on Cascade system for liquefactions.	**07**
	(b)	Discuss the application of cryogenics in food preservation and organ preservation	**07**
Q.5	**(a)**	Explain briefly space simulation chamber	**07**
	(b)	Importance of Inversion Curve in Cryogenic Liquefaction system with neat sketch	**07**
		OR	
Q.5	**(a)**	Explain the thermodynamically ideal system for liquefaction of air and derive an expression for finding liquid yield.	**07**
	(b)	Explain with neat sketch Joule Thomson refrigeration system.	**07**

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