Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 711004N **Date: 21-06--2014**

Subject Name: Elements of Cryogenic Engineering

Time: 02:30 pm - 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.**

Q.1	**(a)**	What is cryogenics? Describe the scope of cryogenics.	**07**
	(b)	Discuss the properties of Helium as cryogenic fluid.	**07**
Q.2	**(a)**	Write in detail about multilayer insulation.	**07**
	(b)	Explain the variation of specific heat of solids.	**07**
		OR	
	(b)	Explain the effect of low temperature on thermal conductivity of the materials with neat diagram.	**07**
Q.3	**(a)**	Write the calibration process for thermometer based on the principal of Curie law.	**07**
	(b)	Write note on fluid quality measurement.	**07**
		OR	
Q.3	**(a)**	What are the different medical applications of cryogenics? Explain how the cryosurgery is done? Also discuss its advantages.	**07**
	(b)	Discuss the applications of cryogenics in nuclear propulsion.	**07**
Q.4	**(a)**	Explain causes and precautions for accidents in cryogenic plants.	**07**
	(b)	Write note on space simulation chamber.	**07**
		OR	
Q.4	**(a)**	Explain cryogenic application in Rocket propulsion systems.	**07**
	(b)	Discuss the applications of cryogenics in food and organ preservation	**07**
Q.5	**(a)**	Briefly mention steps to prevent accidents in cryogenic plants.	**07**
	(b)	Write on safety and precautions to be taken for the storage of gaseous cylinders.	**07**
		OR	
Q.5	**(a)**	List the vacuum measurement devices and explain McLeod gauge with neat sketch.	**07**
	(b)	Discuss about the physical and chemical hazards in cryogenic.	**07**

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