Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 711004N

Date: 10-01-2013

Subject Name: Elements of Cryogenic Engineering Time: 02.30 pm – 05.00 pm

Total Marks: 70

Instructions:

Q.4

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) How will you define a cryogenic engineering and explain importance of 07 cryogenic studies?
 - (b) Explain the terms (1) super fluidity (2) fountain effect (3) Creeping film 07 of Helium
- Q.2 (a) Why insulation is necessary for cryogenic vessels? List the types of 07 cryogenic insulations and write a note on power insulation.
 - (b) Explain the effect of low temperature on hardness and ductility of the 07 materials with neat diagram.

OR

- (b) Explain the effect of low temperature on specific heat of liquids and 07 gases.
- Q.3 (a) Explain how cryogenics is useful to Medical applications. Explain any 07 one application in detail with line sketch.
 - (b) Write a short note on space simulation chamber with line diagram. 07 OR
- Q.3 (a) Explain superconductivity and list its different applications? Explain any 07 one application in detail.
 - (b) What are the different types of thermometer used for low temperature? 07 Describe working of any one thermometer with neat sketch.
- Q.4 (a) Explain various types of hazards occur in cryogenic plant with suitable 07 examples.
 - (b) Explain causes and precautions for accidents in cryogenic plants. 07 OR

(a) Write a note on chemical hazards in cryogenics.

- 07
- (b) Write a note on Safety devices necessary for cryogenic storage vessel. 07
- Q.5 (a) List the Pressure measurement devices and explain thermal conductivity 07 gauge with neat sketch
 - (b) What are the different types of liquid level measurement devices? 07 Explain hydrostatic gauge with neat sketch.

OR

Q.5	(a)	What care should be taken while storage and handling of gases?	07
	(b)	Write a short note on the cryo-freezing and food preservation.	07
