

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:**

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 cryogenic studies? **07**
(b) Explain the terms (1) super fluidity (2) fountain effect (3) Creeping film of Helium **07**

- Q.2** (a) Why insulation is necessary for cryogenic vessels? List the types of cryogenic insulations and write a note on power insulation. **07**
(b) Explain the effect of low temperature on hardness and ductility of the materials with neat diagram. **07**

OR

- (b) Explain the effect of low temperature on specific heat of liquids and gases. **07**

- Q.3** (a) Explain how cryogenics is useful to Medical applications. Explain any one application in detail with line sketch. **07**
(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 one application in detail. **07**
(b) What are the different types of thermometer used for low temperature? Describe working of any one thermometer with neat sketch. **07**

- Q.4** (a) Explain various types of hazards occur in cryogenic plant with suitable examples. **07**
(b) Explain causes and precautions for accidents in cryogenic plants. **07**

OR

- Q.4** (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 gauge with neat sketch **07**
(b) What are the different types of liquid level measurement devices? Explain hydrostatic gauge with neat sketch. **07**

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**
