

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.

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|------------|------------|--|-----------|
| 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 |
