

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. SEMESTER III–EXAMINATION (Remedial)– WINTER 2015

Subject code: 733903

Date: 07/12/2015

Subject Name: Cryogenics 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 different methods of production of low temperature. **07**
(b) Write short note on criteria's of selection of cryogenic fluids. **07**

- Q.2** (a) Explain briefly the significance of cryogenics applications for space technology. **07**
(b) Explain the concept of ortho-hydrogen and para-hydrogen. **07**
Also Explain difference between ortho-hydrogen and para-hydrogen.

OR

- (b) Describe cryostats in detail. **07**

- Q.3** (a) Linde-Hampson cycle cannot be used as it is for Neon, Hydrogen and Helium. Explain. **07**
(b) With a neat sketch explain the construction and working of space simulation chamber. **07**

OR

- Q.3** (a) Explain Heylandt system and its thermodynamic analysis. **07**
(b) Explain Claude system. **07**

- Q.4** (a) Describe briefly about various commercial pressure transducers used for pressure measurements at low temperature. **07**
(b) Explain construction and working of Magnetic Thermometer having sensing element of paramagnetic material. **07**

OR

- Q.4** (a) Explain in detail about Metallic resistance thermometers. **07**
(b) Briefly describe any one cryogenic liquid level measuring device. **07**

- Q.5** (a) What are the various Safety criteria to be considered for handling of cryogens? Discuss in detail. **07**
(b) Discuss in detail about the applications of cryogenics in food preservations. **07**

OR

- Q.5** (a) With a neat sketch explain the construction and working of a chemical rocket engine **07**
(b) Explain the use of cryogenics in blood and bio-cell preservations. **07**

