	T 1
Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER II EXAMINATION – SUMMER 2017

Subject Name: Cryogenic System		25/05/2017 Marks: 70	
Q.1	(a) (b)	operation with the help of schematic and T-s diagram.	07 07
Q.2	(a) (b)	expression for its COP.	07 07
	(b)	Explain thermodynamic ideal isothermal source system and derive expression for its COP.	07
Q.3	(a)	Explain with neat sketch precooled Linde Hampson system for gas liquefaction.	07
	(b)	Explain with neat sketch the modification done by Heylandt over Claude system for gas liquefaction.	07
Q.3	(a)	OR Explain with the help of neat sketch the working of double volume Gifford McMahon refrigerator. State its salient features. Compare it with single volume Gifford McMahon refrigerator.	07
	(b)		07
Q.4	(a) (b)	Explain Simon helium liquefier and state its limitations. Explain the BET equation and all the terms involved in it. OR	07 07
Q.4	(a)	Draw a neat sketch of Collins helium liquefaction system when two expanders are used. Explain briefly its working. How will the performance change if LN2 bath is used in Collins system. Discuss.	07
	(b)	Describe pressure swing adsorption system for separation of nitrogen from air with neat schematic diagram.	07
Q.5	(a)	Explain concept of Pulse tube refrigeration. Enlist various types of Pulse tube refrigerators with their configurations.	07
	(b)	Write a short note on Vuillemier Refrigerator. OR	
Q.5	(a)	State and explain the principle of magnetic cooling. Also explain the	07

cryocooler working on this principle.(b) Write a short note on Dilution Refrigerator.
