Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E -IVth SEMESTER–EXAMINATION – MAY- 2012

Subject code: 741001 **Date: 12/05/2012**

Subject Name: Advanced Cryogenics & Applied Superconductivity

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)**	Write note on use of superconductivity in Nuclear Magnetic Resonance (NMR).	**07**
	(b)	Discuss how computer and information technology field get affected by superconductivity?	**07**
Q.2	**(a)**	Discuss observed characteristics such as zero electrical resistance and perfect diamagnetism of superconductors.	**07**
	(b)	Write note on discovery and early history of superconductivity.	**07**
		OR	
	(b)	Express your views on challenges and opportunities involved in high temperature superconductivity.	**07**
Q.3	**(a)**	"Superconductor based products are environmental friendly compared to their conventional counterparts"- Evaluate it.	**07**
	(b)	Discuss the unique properties of superconductive materials.	**07**
		OR	
Q.3	**(a)**	Write note on energy gap.	**07**
	(b)	Explain Josephson effect and tunneling.	**07**
Q.4	**(a)**	Explain the application of superconductivity in Power sector.	**07**
	(b)	Discuss how superconductivity is helpful to transportation system?	**07**
		OR	
Q.4	**(a)**	Explain the general features of Cuprates superconductors.	**07**
	(b)	Give your views on Superconductivity and Superfluidity.	**07**
Q.5	**(a)**	Write note on Low temperature Superconductors.	**07**
	(b)	Write note on usefulness of superconducting materials in wireless communication.	**07**
		OR	
Q.5	**(a)**	Define superconducting motors. How superconducting motors differ from conventional motor?	**07**
	(b)	Explain how advanced cryogenics helped in development of superconductors.	**07**

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