Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2712108 **Date: 12-01-2015**

Subject Name: HYDROGEN AND FUEL CELL TECHNOLOGY

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)**	Explain importance of Hydrogen as the fuel of the future giving suitable justification.	**07**
	(b)	Compare physical and chemical properties of Hydrogen with conventional fuel.	**07**
Q.2	**(a)**	Discuss issues related to safety for hydrogen.	**07**
	(b)	Describe Steam reforming process for production of Hydrogen.	**07**
		OR	
	(b)	Describe Water electrolysis process for production of Hydrogen.	**07**
Q.3	**(a)**	Describe use of Hydrogen as fuel in Automobile sector.	**07**
	(b)	Describe compressed gas storage system for hydrogen.	**07**
		OR	
Q.3	**(a)**	Why multi staging and intercooling processes are employed during compression of hydrogen.	**07**
	(b)	Describe Liquid hydrogen storage system.	**07**
Q.4	**(a)**	Describe working principle of Fuel Cell.	**07**
	(b)	Describe working of Solid Oxide Fuel Cell with merits and demerits.	**07**
		OR	
Q.4	**(a)**	Describe working of Molten Carbonate Fuel Cell with merits and demerits.	**07**
	(b)	Describe working of Direct Methanol with merits and demerits.	**07**
Q.5	**(a)**	Explain use of Fuel Cells in Automobile sector.	**07**
	(b)	Explain future trends in fuel cells	**07**
		OR	
Q.5	**(a)**	Explain use of Fuel Cells in domestic and power generation sector.	**07**
	(b)	Describe working of Phosphoric Acid Fuel Cell with merits and demerits.	**07**

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