Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 1721102 **Date: 03-12-2014**

Subject Name: Alternate Fuels and Energy

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)**	What are barriers in implementing alternative fuels? What are your views on the road map given for alternative fuel?	**07**
	(b)	Explain the following with reference to hydrogen as alternative fuel: Timed manifold injection, Emissions from hydrogen.	**07**
Q.2	**(a)**	Explain CNG scenario in India and explain CNG standards and regulations	**07**
	(b)	Explain production, properties and storage of LPG as alternate fuel in engines.	**07**
		OR	
	(b)	Explain operational problems of bio gas as alternate fuel in engines and bio gas regulations.	**07**
Q.3	**(a)**	Define following: pour point, cloud point, flash point, Cetane number, Iodine value	**07**
	(b)	Explain following modified components of an engine run with vegetable oil: nozzle design delay, combustion chamber modifications.	**07**
		OR	
Q.3	**(a)**	Explain engine modification required for engine run with straight vegetable oils. List its advantages and disadvantages.	**07**
	(b)	Write brief notes on shale oils, ignition accelerators.	**07**
Q.4	**(a)**	Differentiate between diesel and bio diesel. Discuss problems relating to storage of bio diesel.	**07**
	(b)	Explain the following: Electric vehicle motor requirements, DC motors, and electric power devices.	**07**
		OR	
Q.4	**(a)**	Explain method of converting C.I. Engine to a Dual fuel engine.	**07**
	(b)	Explain criteria of choosing the battery in an electric vehicle.	**07**
Q.5	**(a)**	Sketch a typical solar operated automobile .list its components and functions.	**07**
	(b)	Compare emission and safety aspects of following: 1. Hydrogen fueled and vegetable fueled engine. 2. LNG fueled and LPG fueled engine.	**07**
		OR	
Q.5	**(a)**	Compare performance of following: 1. Solar powered and dual fuel powered engine. 2. CNG and LPG fueled engine.	**07**
	(b)	Discuss developments with regards to coal to liquid that have taken place in India. List its advantages.	**07**

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