Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I • EXAMINATION – WINTER 2014

Subject Code: 2711110 Date: 12/01/2015

Subject Name: Alternate Fuels and Energy

Time:14:30 to 17:00 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)**	Discuss availability and compare properties of different alternative fuels for Gasoline fuel	**07**
	(b)	Enlist major properties of biogas and discuss modification required to use biogas in IC Engines.	**07**
Q.2	**(a)**	Explain (1) Ignition accelerators (2) Reformed alcohol (3) Emulsion Fuel	**07**
	(b)	Discuss Engine performance & pollutant emissions using 20% Methanol-80% Gasoline blend by volume in multi cylinder gasoline engine.	**07**
		OR	
	(b)	Explain different types of Ignition accelerators used with example of each type.	**07**
Q.3	**(a)**	Discuss engine performance & pollutant emissions using straight vegetable oil as fuel.	**07**
	(b)	Explain Esterification process in brief. Discuss various parameters affecting yield and properties of biodiesel during Esterification.	**07**
		OR	
Q.3	**(a)**	Discuss Engine performance & pollutant emissions using Biodiesel as fuel.	**07**
	(b)	Enlist three different dual fuel combinations. Explain operation of engine in dual fuel mode using suitable fuel combination.	**07**
Q.4	**(a)**	Compare CNG and LPG as fuel for IC Engine.	**07**
	(b)	Discuss storage, handling and safety aspects for Hydrogen fuel.	**07**
		OR	
Q.4	**(a)**	With neat sketch explain main components of CNG conversion kit.	**07**
	(b)	Explain modifications required to use LPG as fuel in IC Engine.	**07**
Q.5	**(a)**	Explain construction and working of electric vehicle.	**07**
	(b)	Compare engine performance & pollutant emission using Gaseous and Liquid fuels.	**07**
		OR	
Q.5	**(a)**	Enlist type of hybrid vehicles available and explain construction and working of any one hybrid vehicle with neat sketch.	**07**
	(b)	Differentiate AGM battery with conventional and with neat sketch explain construction of AGM battery.	**07**

****