

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME - SEMESTER-I(New course)• EXAMINATION – WINTER- 2015**

**Subject Code: 2711110****Date: 04/01/2016****Subject Name: Alternate Fuels and Energy****Time: 2:30 pm to 5:00 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) Discuss merits and demerits of CNG, Biodiesel, Alcohols and Hydrogen as alternative fuels. **07**  
(b) Compare important properties and discuss availability of various alternate fuels for an automobile. **07**
- Q.2** (a) Describe production process of ethanol from raw material. **07**  
(b) Explain modification required in engine to use ethanol as fuel. **07**
- OR**
- (b) Describe use of reformed alcohol in CI Engine **07**
- Q.3** (a) Describe need for an alternative fuel in India **07**  
(b) Describe Performance and Emission characteristics of biodiesel in CI Engine **07**
- OR**
- Q.3** (a) Discuss operating parameters that affect yield and quality of biodiesel **07**  
(b) Describe process of converting coal in to liquid fuel **07**
- Q.4** (a) Describe modification required in IC engine to use CNG as fuel **07**  
(b) Describe Performance and Emission characteristics of CNG in SI Engine **07**
- OR**
- Q.4** (a) Enlist different methods to run the vehicle with hydrogen as fuel. Explain construction and working of Fuel cell vehicle. **07**  
(b) Describe Performance and Emission characteristics of LPG in SI Engine **07**
- Q.5** (a) Enlist advantages of Li Ion battery. Explain working of Li ion battery with neat sketch. **07**  
(b) Compare series and parallel hybrid vehicles **07**
- OR**
- Q.5** (a) Describe construction and working of electric vehicle with neat sketch **07**  
(b) Enlist and describe different Ignition Accelerator used in automobile **07**

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