

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 170205****Date: 29-11-2014****Subject Name: Alternative Fuels and Engines****Time: 10:30 am - 01:00 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 the significant reasons for the development of alternative fuels. Also discuss the barriers in implementing alternative fuels in India. **07**
- (b) Explain biodiesel production process with suitable sketch. **07**
- Q.2** (a) Discuss advantages, disadvantages and properties of methanol as an alternative fuel. **07**
- (b) Define the term volatility of fuel. Discuss the effects of volatility on S.I. engine performance. **07**
- OR**
- (b) Explain working of Free Piston engine with neat schematic diagrams. **07**
- Q.3** (a) Discuss advantages, disadvantages & important properties of biodiesel. **07**
- (b) Draw layout of LPG vehicle and explain it. **07**
- OR**
- Q.3** (a) Explain construction & working of Wankel engine with neat sketches. **07**
- (b) Discuss advantages & disadvantages of CNG as an alternative fuel. Explain different components of CNG gas conversion kit in brief. **07**
- Q.4** (a) Explain different types of biogas plants. **07**
- (b) Write a short note on Solar vehicle. **07**
- OR**
- Q.4** (a) Explain series type & parallel type hybrid electric vehicle with neat schematic diagrams. **07**
- (b) Discuss advantages, disadvantages & performance characteristics of Electric vehicles. **07**
- Q.5** (a) Discuss advantages, disadvantages & properties of hydrogen fuel. **07**
- (b) Explain basics of fuel cell with neat sketch. Also discuss advantages & challenges for the fuel cell vehicles. **07**
- OR**
- Q.5** (a) Write a short note on Eco Friendly Plastic Fuels. **07**
- (b) Discuss different emission norms as per BS-I,II,III,IV for the engines in brief. **07**
