

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013****Subject code: 1721102****Date: 27-12-2013****Subject Name: Alternate Fuels & Energy****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) Compare LPG and petrol as fuel for SI engines. **07**
(b) Explain the reasons for looking alternate fuels for IC engines. **07**
- Q.2** (a) Discuss important properties of CNG as fuel for automobile engines. **07**
(b) Write merits and limitations of CNG as an automotive fuel. **07**
- OR**
- (b) Explain layout of an electrical vehicle with neat sketch. **07**
- Q.3** (a) Write short note on hybrid vehicles. **07**
(b) Explain with schematic arrangement working of solar electric vehicle. **07**
- OR**
- Q.3** (a) Explain with the help of biological reactions the production of biogas. **07**
(b) Explain modifications are required for operating SI engine on biogas. **07**
- Q.4** (a) Discuss production and storage of hydrogen. **07**
(b) Discuss engine performance and exhaust emissions using CNG. **07**
- OR**
- Q.4** (a) Compare ethanol and methanol as substitute to gasoline. **07**
(b) Explain the properties of LNG which are in its favor to use it as a substitute fuel for automobile. **07**
- Q.5** (a) Discuss use of dual fuel systems in IC engine. **07**
(b) With help of graphs discuss the effect of percentage of bio-diesel on specific fuel consumption, brake thermal efficiency and exhaust emissions as CO, HC & NO_x. **07**
- OR**
- Q.5** (a) Discuss storage, dispensing system and material compatibility using bio-diesel as fuel for IC engine. **07**
(b) State different feed stocks and explain esterification process used to make bio-diesel from any vegetable oil. **07**
