Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME – SEMESTER – 1 • EXAMINATION – WINTER 2016**

**Subject Code: 2711110** **Date:06/01/2017**

**Subject Name: Alternate Fuels and Energy**

**Time:2.30 to 5.00** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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| **Q.1** | **(a)** | Discuss major drawbacks of present conventional fuels. | **07** |
| | **(b)** | Compare availability and major properties of Ethanol, Methanol and Gasoline fuels. | **07** |
| **Q.2** | **(a)** | Discuss merits and demerits of Hydrogen and CNG as alternate Fuel. | **07** |
| | **(b)** | Describe method for production of Ethanol. | **07** |
| | | **OR** | |
| | **(b)** | Describe method for production of Methanol. | **07** |
| **Q.3** | **(a)** | Discuss Performance and Emission characteristics of IC Engine using biogas as fuel. | **07** |
| | **(b)** | Discuss Performance and Emission characteristics of stratified charge engine using alcohol as fuel. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Discuss Performance and Emission characteristics of SI Engine using methanol as fuel. | **07** |
| | **(b)** | Describe safety aspects during storage and handling of gaseous fuels. | **07** |
| **Q.4** | **(a)** | Discuss Performance and Emission characteristics of CI Engine running on biodiesel without any modification. | **07** |
| | **(b)** | Discuss IC engine performance improvement using Ignition accelerators. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain dual fuel systems with neat sketch. | **07** |
| | **(b)** | Describe modification required to use LPG in present SI Engine. | **07** |
| **Q.5** | **(a)** | Describe various sources for production of CNG and biogas. | **07** |
| | **(b)** | Explain working principle of Fuel cell vehicle. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Enlist different methods of hydrogen production. Explain any one method in detail. | **07** |
| | **(b)** | Describe construction and working of parallel hybrid vehicle with neat sketch. | **07** |

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