**Seat No.: _____** **Enrolment No._____**

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VII (OLD) - EXAMINATION – SUMMER 2017**

**Subject Code: 170505** **Date: 29/04/2017**

**Subject Name: Energy Technology ( Department Elective-I )**

**Time: 02:30 PM to 05:00 PM** **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)** | Define the followings :<br>(i) Energy Plantation (ii) Proximate analysis (iii) Ultimate analysis<br>(iv) Caking of coal (v) Gross Calorific value at constant volume<br>(vi) Coking of coal (vii) Net Calorific value at constant pressure | **07** |
| | **(b)** | Write a Short note on Composition of coal. | **07** |
| **Q.2** | **(a)** | Discuss gasification and liquefaction of solid fuels. | **07** |
| | **(b)** | What is solar collector? List various types of Focusing type Concentrator and Explain any one. | **07** |
| | | **OR** | |
| | **(b)** | Describe with neat sketch the working of a wind energy system with main components. | **07** |
| **Q.3** | **(a)** | Give the names of the ocean source of energy. Discuss above the Open Cycle OTEC System. | **07** |
| | **(b)** | Enlist different geothermal resources and explain heat extraction from hot dry rocks. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Write a note on methods of utilizing tidal energy and its storage. | **07** |
| | **(b)** | Explain advantages and disadvantages of geothermal energy. | **07** |
| **Q.4** | **(a)** | What is Fuel Cell? Describe Molten Carbonate Fuel Cell (MCFC) with neat and clean diagram. | **07** |
| | **(b)** | What is Magneto Hydro Dynamic Power Generator? Discuss its principle with a neat sketch. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Discuss in details with neat sketch: Hydrox ($H_2$-$O_2$) fuel cell. | **07** |
| | **(b)** | Discuss advantages and disadvantages of MHD system. | **07** |
| **Q.5** | **(a)** | Give detailed classification of energy sources: primary and secondary sources, conventional and non-conventional sources. | **07** |
| | **(b)** | What is Biomass? Classify the Biogas plant and Explain any one in detail. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Describe in detail: Hydrogen storage | **07** |
| | **(b)** | What are the main conditions for thermonuclear fusion? Explain in brief any one nuclear reactor. | **07** |

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