

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – WINTER 2013

Subject Code: 170505**Date: 03/12/2013****Subject Name: Energy Technology****Time: 10:30 TO 01:00****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) What are the conventional and non-conventional energy sources? Explain in detail. **07**
- (b) Describe gasification of solid fuels and give detail classification of gasification process. **07**

- Q.2** (a) What is the significance of proximate and ultimate analysis of coal? Describe in detail method of proximate analysis of coal. **07**
- (b) Classify the methods of solar energy storage and describe thermal energy storage system **07**

OR

- (b) What is coal preparation? Describe coal washing by froth flotation process. **07**

- Q.3** (a) What are the main applications of a solar pond? Describe solar pond briefly. **07**
- (b) Describe with neat sketch the working of a wind energy system with main components. **07**

OR

- Q.3** (a) Describe the main considerations in selecting a site for wind generators. **07**
- (b) Discuss the basic steps involved in biogas generation from biomass. **07**

- Q.4** (a) Describe binary cycle system for liquid dominated system. **07**
- (b) Describe the closed cycle OTEC system, with its advantages over open cycle system. **07**

OR

- Q.4** (a) What is fuel cell? Explain the working of ion-exchange membrane type fuel cell with neat sketch. **07**
- (b) Explain two stage thermo-chemical transformation of wood to methanol. **07**

- Q.5** (a) (i) Classify MHD systems. **07**
- (ii) With following specifications for MHD generator, calculate the open circuit voltage and maximum power output. Plate area- 0.1 m^2 , Distance between the plates- 0.5 m , Flux density- 3 Wb/m^2 , Average gas velocity- $10^3 \text{ m}^3/\text{sec}$, Gaseous conductivity- 10 mho/m .
- (b) Discuss the working and construction of fast breeder reactor. **07**

OR

- Q.5** (a) Describe the principle of total flow concept. Compare it with other system. **07**
- (b) Discuss the materials used for biogas generation and explain the selection criteria of site for biogas plant. **07**
