Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 161904   **Date: 28/11/2011**
Subject Name: Alternate Energy Sources
Time: 10.30 am -1.00 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)** Which are the non- conventional energy sources? State the merits and demerits of Solar energy. — 07

(b) Calculate the solar insolation on the top of the atmosphere on 23 March and 19 June, 2011. Take Solar constant = 1353 W/m^2. — 07

Q.2 **(a)** What is Solar pond? Explain Solar pond with a neat sketch. — 07

(b) Which instruments are used for Solar radiation measurements? Explain construction and working of Pyranometer. — 07

OR

(b) What is the basic principle of OTEC? Explain Closed cycle OTEC plant. — 07

Q.3 **(a)** Classify Biogas plants. Explain KVIC digester with a schematic diagram. — 07

(b) Give classification of Solar concentrating collectors. Explain Compound parabolic concentrator briefly. — 07

OR

Q.3 **(a)** Write note on Solar photovoltaic cells. — 07

(b) Define the term 'Tidal range". Explain 'Double basin tidal power plant'. — 07

Q.4 **(a)** State MHD principle. Explain Open MHD plant with a neat diagram. — 07

(b) Write the advantages of Geothermal Energy. Explain Liquid dominated geothermal plant. — 07

OR

Q.4 **(a)** Describe the main considerations in selecting the site for wind energy conversion system. — 07

(b) Write short note on : (i) Savonious rotor (ii) Darrieus rotor — 07

Q.5 **(a)** Define the term 'Energy Management'. Write note on "Energy Audit" — 07

(b) What do you mean by Solar distillation? Explain Solar still with a neat diagram. — 07

OR

Q.5 **(a)** Briefly explain the various direct and indirect applications of solar energy. — 05

(b) Explain Passive space heating system with a schematic diagram. — 04

(c) Calculate the number of daylight hours in Delhi on 22 December 1995. Take Latitude = 28^{0}35' N. — 05

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1