

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 =  $1353 \text{ W/m}^2$ . **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) Savonius 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 =  $28^{\circ}35' \text{ N}$ . **05**

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