

**CERTIFICATE IN ENERGY TECHNOLOGY AND
MANAGEMENT (CETM)**

Term-End Examination

December, 2011

**OEY-002 : RENEWABLE ENERGY
TECHNOLOGIES AND THEIR USES**

Time : 3 hours

Maximum Marks : 70

*Note : Attempt **any ten** questions. All questions carry **equal** marks. Use of scientific calculator is permitted.*

1. Give a brief description of the future projection of energy demand in our country. 7
2. Explain the working of a bio gas plant. 7
3. Analyse the advantages and limitations of biomass energy in the Indian Context. 7
4. Describe the main applications of solar thermal technology. What are the advantages and limitations of using this technology ? 7
5. What are the key components of a solar photovoltaic system ? Describe the applications of solar photovoltaics. 7

6. Which of your own needs can be met by using solar energy ? Make a list of the useful solar technologies in your conditions. Prepare an action plan for using solar energy in your home or in your community. 7
7. Describe the concept of direct gain heating and cooling of solar passive buildings. Which materials should be used in such design ? 7
8. Explain in brief the green house effect and global warming. 7
9. Discuss the merits and demerits of solar drying. 7
10. Define *any seven* of the following : 7x1=7
- (a) Absorptance.
 - (b) Solar constant
 - (c) Kirchoff's law of radiation.
 - (d) Thermosyphon
 - (e) Pay back period
 - (f) Renewable energy
 - (g) Nocturnal Production
 - (h) Inverter
 - (i) Solar lantern
 - (j) BOD

11. What do you mean by 'Gasification' ? Explain any type of Gasifier with the help of suitable diagram. 7
12. What is the main difference between batch plants, continuous plants and semi-continuous plants ? 7
13. For a 1.2m^2 solar cell array, the following data are given. The array is used to supply a constant load of 20 W. The efficiency of power conditioning system is 96%. $H=16 \text{ MJ/m}^2 \text{ day}$. 7
- The average cell efficiency = 0.15.
- the transmissivity = 0.98.
- Determine the monthly average daily array output and monthly average daily electrical energy available.
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