

IV B.Tech I Semester Regular Examinations, November 2005
NON CONVENTIONAL ENERGY SOURCES
(Electrical & Electronic Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain in detail different kinds of renewable energy resources.
(b) Discuss the availability, prospects and economic feasibility of each.
(c) Elaborate on the comprehensive approaches to Energy Management. [6+4+6]
2. Calculate the angle made by beam radiation with the normal to a flat collector on December 1 at 9.00AM, solar time for a location at 28°35' N. The collection is tilted at an angle of latitude plus 10°, with the horizontal and is pointing due south. [16]
3. (a) Enumerate the advantages and disadvantages of wind power.
(b) Write short notes on potential wind power in India.
(c) List few companies manufacturing WEC devices. [6+6+4]
4. (a) Draw the schematic diagram and explain the Open cycle OTEC system. What are the operational difficulties encountered in OTEC plants?
(b) Find the quantity of water to be pumped to OTEC plant working with surface water at 27° C and with cold water at 8° C at a depth of 600 m from the surface to obtain 1.0MW of energy. Assume the density of ocean water as 1010 kg/m³ and the specific heat of water as 4200 J/kg K. [10+6]
5. How are ocean waves formed? Explain with a schematic diagram how this energy can be tapped. [16]
6. (a) Explain with neat sketches the basic principle of tidal power generation. What are the limitations of each method.
(b) A tidal project has installed capacity of 2176MW in 64 units each of 34MW rated output. The head at rated output is 5.52m. The embankment is 6.4 km long. Assume 93% efficiency for both turbine and generators. The generation is 5 hours twice a day calculate:
 - i. The quantity of water flowing through each turbine.
 - ii. The surface area of reservoir behind the embankment. [8+8]
7. (a) Describe a Binary cycle system for liquid dominated system.
(b) What are the limitations of a flashed steam system?
(c) What are the advantages of double flash system? [6+5+5]

8. (a) How bio-gas can be utilized in Spark ignition engine? Explain with neat sketch.
- (b) What is meant by anaerobic digestion? What are the factors which affect biodigestion? Explain briefly. [8+8]
