

IV B.Tech I Semester Supplementary Examinations, April/May 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) What are the various renewable sources of energy? Compare solar energy with other forms emphasizing on merits and demerits.
(b) Explain different methods to improve the power factor in electrical applications.
2. Explain the following with sketch:
 - (a) Flat plate arrays of solar cell modules
 - (b) Solar cell connecting arrangements
 - (c) Explain with a neat sketch, the operation of a central tower receiver system for power generation.
3. Explain the following:
 - (a) Circumferential force on blades
 - (b) Axial thrust on wind turbines
 - (c) Lift and drag
 - (d) Stalling
4. (a) Explain the operation of a closed cycle OTEC system.
(b) Discuss its advantages and disadvantages compared to open cycle OTEC plant.
5. Discuss the methods of harnessing wave energy
6. Describe the following schemes for tidal generation, with suitable figures:
 - (a) Ebb generation;
 - (b) Flood generation;
 - (c) Two-way generation;
 - (d) Single-basin scheme;
 - (e) Two-basin scheme.
7. (a) Show the cross-section of the earth and temperature of different depths.
(b) Explain how geothermal energy is used for power generation.
(c) Derive an expression to estimate the energy content of a hot dry rock geothermal resource, assigning linear variation of temperature. Hence obtain an expression for the time constant of a geo-thermal well.

8. (a) Explain in detail the various principal routes of Bio mass energy conversion to useful energy?
- (b) Explain the origin of Bio-mass energy in detail.
- (c) Explain the difference between bio mass energy resources and fossil fuel.

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